Delta RMP Steering Committee Meeting

Friday March 27, 2015

Central Valley Regional Board, 11020 Sun Center Drive #200, Rancho Cordova, CA

Board Room

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Agenda

Desired meeting outcomes

1. *Update on timeline for program activities and requested products*
2. *Confirm funding arrangements for FY14-15*
3. *Determine adequate participation*
4. *Decide on TAC co-chair appointments and funding*
5. *Clarify roles and responsibilities of implementing entity*
6. *OK contractors and sole source justifications*

1.	**Introductions** Establish quorum		**9:30** **Brock Bernstein**
2.	**Announcements from Committee Members**		**9:35** **Brock Bernstein**
3.	**Approve agenda and summary (Attachment)** Agree on agenda and approve November 7 and January 22 meeting summaries		**9:45** **Brock Bernstein** **Thomas Jabusch**
4.	**TAC Updates** The TAC co-Chairs will summarize the outcomes of the March 12 TAC meeting		**10:00** **Stephen McCord Joe**

			Domagalski
5.	**Update: Monitoring Design revisions** The Steering Committee provisionally approved the Monitoring Design, for purposes of proceeding to implement the workplan for the remainder of fiscal year 14/15. However, additional revisions were requested at the January 22 meeting and in several comment letters to ASC from participating groups. <u>Desired outcome:</u> - Provide an update on · Status of revisions · Remaining issues to be resolved by the SC and/or the TAC · Proposed schedule for resolving them		**10:30** **Thomas Jabusch**
6.	**Decision: Approve Phased Implementation of FY 14/15 Workplan Based on Available Funding** ASC staff will provide an update on program finances, including a monthly cash-flow analysis for FY 14/15. Then, ASC staff will present a proposal for phased implementation of the FY 14/15 workplan <u>Desired outcome:</u> - Confirm funding arrangements for FY14-15 planned contributions - Approval of revised FY 14/15 Workplan	06A-Delta RMP Financial Update 06B-Delta RMP FY1415 Workplan	**10:45** **Philip Trowbridge**
7.	***Lunch break***		**12:00**
8.	**Decision: Process for selecting future contractors** ASC will present a proposed process for selecting future contractors <u>Desired outcome:</u> - Approve process for selecting future contractors	08-Delta RMP Financial Management	**12:30** **Phil Trowbridge**

9.	**Decision: Adequate Participation** Review and refine proposed draft criteria structure as needed. Discuss expected contributions for FY 15/16. Desired outcome: - Agree on criteria and process for determining adequate participation - Review planned FY 15/16 contributions	09A-Draft Adequate Participation in the Delta RMP 09B-Draft General Process for Establishing RMP Participation	**1:00** **Adam Laputz** **Linda Dorn**
10.	**Decision: TAC co-chairs** The SC discussed at the May 19, 2014 meeting that the terms of the initial TAC co-Chairs and TAC would end upon completion of the initial monitoring plan. After that, the SC would nominate or re-nominate members for a 2-year term and the members of the TAC would appoint a Chair for a two-year term (see attached Roles and Responsibilities). The appointment of the initial TAC co-chairs was contingent upon a funding source for Stephen McCord and Joe Domagalski's pro-bono availability. A renewal or temporary continuation of Stephen McCord's appointment beyond February would require additional funding. Desired outcome: ▪ Guidance to TAC on a) timeframe for transition, and b) funding framework for selecting future co-chairs	10-Committee Roles	**2:15** **Brock Bernstein**
11.	**Plus/Delta, set dates and agenda topics for upcoming meetings**		**3:15** **Brock Bernstein**
12.	**Adjourn**		**3:30**

AQUATIC SCIENCE CENTER

DATE: March 20, 2015

TO: Delta RMP Steering Committee

FROM: Philip Trowbridge

RE: Delta RMP Financial Report

Introduction

Financial support for the Delta RMP is transitioning from a Water Board contract to contributions from Program Participants. This memo summarizes the funds remaining in the Water Board contract and the amount of funding that has been received from Program Participants. The main points are:

- The Water Board contract will be mostly used up by June 30, 2015;
- Program Participants will contribute 63% of expected revenue for the FY 14/15 budget; however, the FY 14/15 workplan can still be implemented while keeping the monthly expenses below the monthly revenue; and
- Contributions for the FY 15/16 budget are needed by June 30, 2015.

Status of Water Board Contract Funds

To date, ASC efforts for the Delta RMP have been supported by funds from the Water Board. As of 2/28/15, the balance of these funds was $69,518 (Table 1). ASC expects to expend another $40,000 by the end of this fiscal year to fund the start-up phase of the program, which will leave approximately $30,000 for FY 15/16.

Table 1: Delta RMP Balance of Funds in the Water Board Contract as of February 28, 2015.

Line Item	Balance as of 2/28/15
Program Management	$3,943
Governance	$10,195
Communications	$28,714
Data Management	$26,666
Total	$69,518

Status of Program Participant Contributions

Funds for the FY 14/15 Budget

For FY 14/15 a total of $470,000 was committed by Program Participants. The current expectation is that 63% of these funds will be received, with the latest arriving in July 2015. A total of $82,800 has been actually received. Contracts or invoices are in place for the remaining $214,376. The FY 14/15 funds have also arrived later than the original schedule. Figure 1 shows the month-by-month schedule for when funds are expected to be received compared to the original plan.

ASC will continue to work with Program Participants to solicit funds for this fiscal year but large increases in revenue are not likely. The current status of funding for the FY 14/15 budget is shown in Table 2. This table does not include in-kind contributions such as SWAMP contract services since these resources are not flowing through ASC as revenue.

Table 2: Delta RMP Program Participant Contributions for the FY 14/15 Budget. "Committed" indicates the original commitment. "Expected" indicates funds secured with an invoice or contract. "Received" indicates funds already received by ASC.

	Committed	Expected	Received	Expected + Received
MS4 Phase 1	$70,000	$70,000		$70,000
MS4 Phase 2	$100,000			$0
POTW	$200,000	$44,376	$82,800	$127,176
IRLP	$0			$0
SFCWA	$100,000	$100,000		$100,000
Grand Total	$470,000	$214,376	$82,800	$297,176

ASC contrasted the predictions for monthly revenue with the monthly expenses for FY 14/15 for a cash flow analysis in Figure 1. The total expected revenue for FY 14/15 ($297,176) was less than the budget for the workplan ($322,225), and the revenue was delayed. However, by using Water Board contract funds and phasing in certain tasks, the FY 14/15 workplan can be implemented while keeping the monthly expenses below the monthly revenue.

Funds for the FY 15/16 Budget

For FY 15/16 a total of $710,000 in revenue is expected. The commitments by Program Participants are shown on Table 3. This table does not include in-kind contributions such as SWAMP contract services since these resources are not flowing through ASC as revenue.

Table 3: Delta RMP Program Participant Contributions for the FY 15/16 Budget. "Committed" indicates the original commitment.

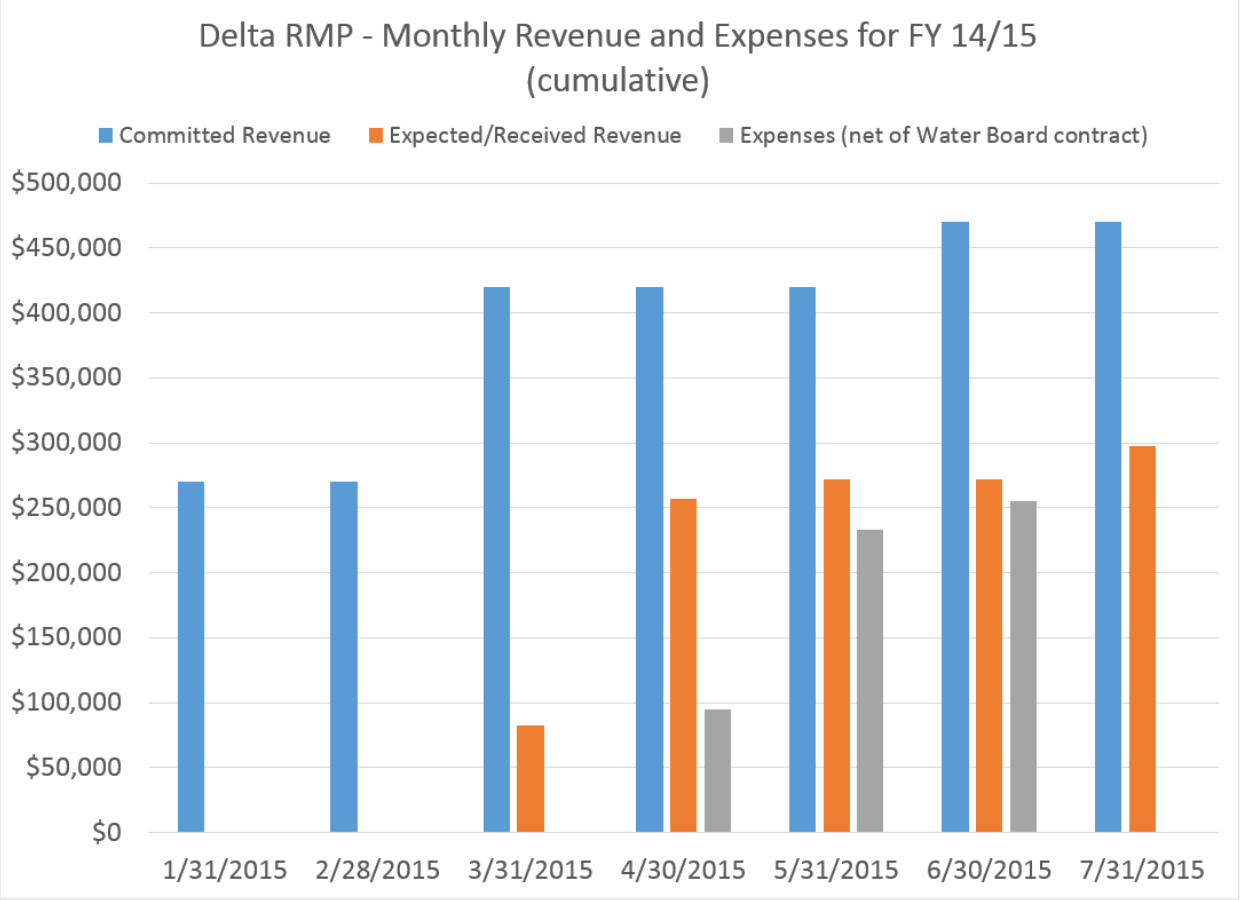
	Committed
MS4 Phase 1	$210,000
MS4 Phase 2	$100,000
POTW	$200,000
IRLP	$200,000*
SFCWA	$0
Grand Total	$710,000

*commitment for IRLP is still under negotiation. Value shown is a placeholder from the original cost allocation spreadsheet.

There will not be much funding left from the Water Board contract or the FY 14/15 budget after June 30, 2015. Therefore, the contributions for the FY 15/16 budget should be received by June 30, 2015 in order to avoid a gap in service for the program.

ASC intends to use invoices and contracts to solicit contributions for the FY 15/16, similar to what was done for FY 14/15. However, the Delta RMP should develop a multi-year Memorandum of Agreement, signed by all parties, to streamline the process for transferring funds to ASC for the FY 16/17 RMP budget.

Figure 1: Delta RMP Cumulative Monthly Cash Flow Summary for FY 14/15. For each bar, the revenue (or expense) for the month and all of the months prior to that month were added together to calculate the cumulative revenue (or expense) since January 1, 2015. Expenses net of Water Board contract are the expenses that must be paid from Program Participant contributions because they cannot be covered by Water Board funds.



Delta Regional Monitoring Program

FY14-15 Workplan

Overview

This workplan provides details and costs of activities to be completed by the Delta Regional Monitoring Program (RMP or the Program) during the second half of FY 14/15 (January 1 to June 30, 2015).

The workplan is meant to implement the Delta RMP Monitoring Design that has been drafted by Program Participants over the past few years. However, the available funds for FY 14/15 are not enough to implement all activities of the initial monitoring design. Therefore, for the initial implementation phase, the proposed monitoring activities will focus on current use pesticide/toxicity, nutrients, and pathogens (*Cryptosporidium* and *Giardia lamblia*). Phasing-in mercury monitoring will be considered for the FY15-16 workplan. In addition to monitoring activities, the workplan also outlines programmatic activities that will be performed to support the RMP: Program Management, Governance, Data Management, and Communications.

The total cost for the proposed 6-month FY14-15 budget is $335,440. Of this total, $84,440 will be covered by an existing contract between the Water Board and ASC and $251,000 will be covered by Program Participant contributions. The cost proportions by program area are shown in Figure 1. Each of the tasks is described in more detail later in this report and a detailed monthly budget has been included as Table 1.

The following sections of this report contain information on the history of the Delta RMP, descriptions of the proposed work tasks, and a monthly cash flow analysis.

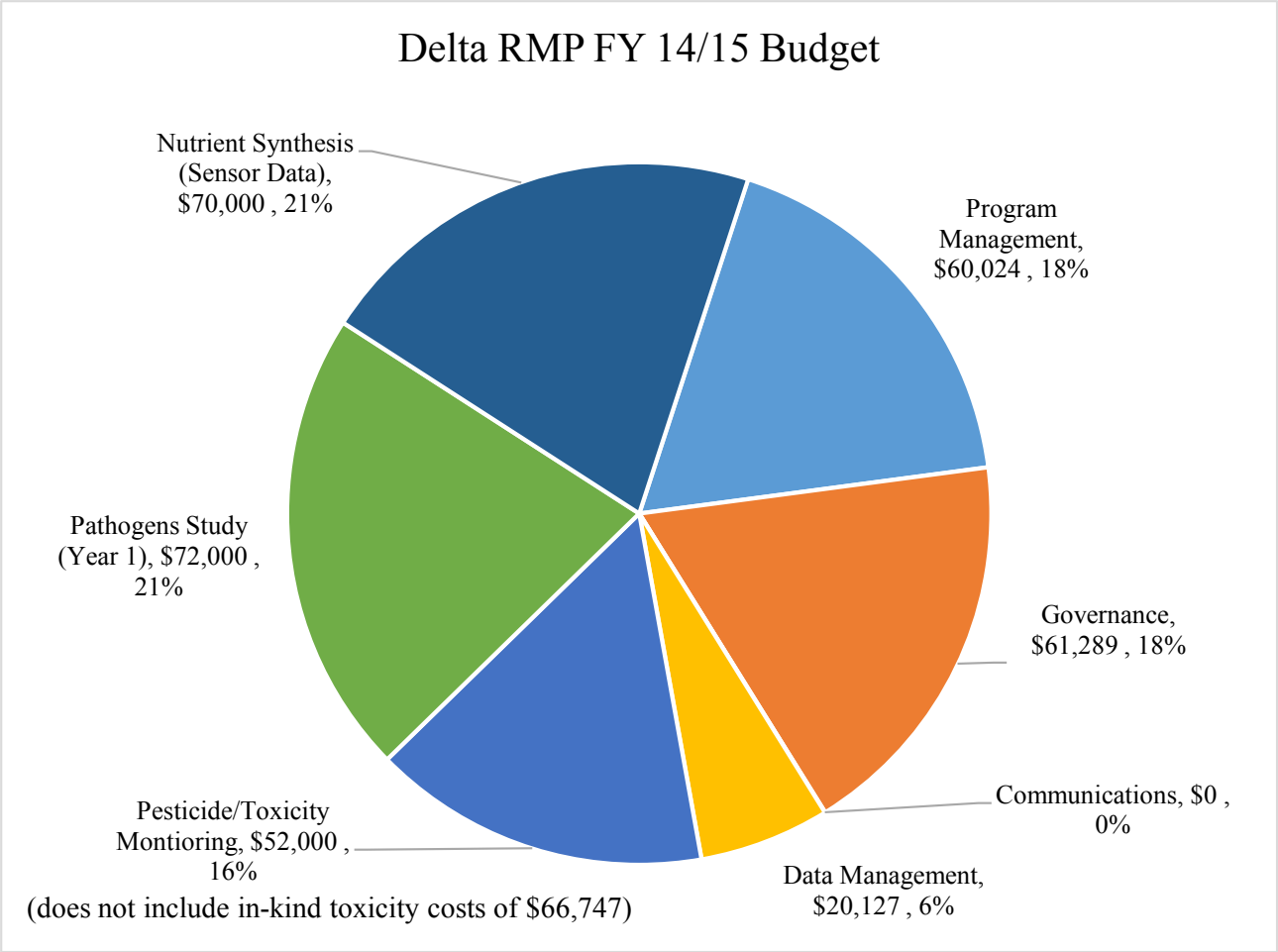


Figure 1. FY 14-15 Delta RMP Budget by program area.

History of the Delta RMP

The Delta RMP was initiated in 2008 by the Central Valley Regional Water Quality Control Board (Regional Water Board) with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta.

The Delta RMP Steering Committee (SC) was formed in 2012. Subsequently, the SC appointed the two initial Technical Advisory Committee (TAC) co-chairs (Joe Domagalski, U.S. Geological Survey [USGS], and Stephen McCord, McCord Environmental Inc. [MEI]) and a TAC. The SC also appointed the Aquatic Science Center (ASC) as the interim implementing entity.

Further work resulted in agreements on the goals and objectives of the Delta RMP and a Management Questions Framework to guide monitoring and assessment at the regional scale. Work to date has also helped to identify a program structure and the initial program priorities (current use pesticides, mercury, nutrients, and a pathogens special study).

Since 2011, the Central Valley Regional Water Board and NPDES (National Pollution Discharge Elimination System) permittees have been working on options for modifying receiving water monitoring of regulated dischargers to make it more efficient and allow the shifting of resources to address regional questions. In October 2014, the Central Valley Regional Water Board passed a resolution that allows for participation in the Delta RMP by NPDES dischargers in lieu of individual receiving water compliance monitoring.

In 2014, the Water Board contracted with ASC to support program activities for the Delta RMP.

TASK DESCRIPTIONS

1. Program Management

During the start up phase of the Delta RMP, program management costs will be higher than for mature monitoring programs. The time required for budgeting, contracting, and planning is high because cash flow needs to be managed on a monthly basis. Uncertainty in the funding requires extra planning for multiple contingencies. Finally, there is the need for frequent coordination both internally and externally.

Deliverables associated with this task include the revised Monitoring Design, the FY15-16 Annual Program Workplan, quarterly financial reports, and a system for tracking deliverables and action items.

The budget for this task is $60,024 (~$10,000 per month). The Water Board contract with ASC will cover $24,024 of the total, which will leave $36,000 to be paid by Program Participants. The cost estimate is based on actual costs incurred in January and February 2015, during which the cost for Program Management averaged $7,000 per month. The month cost is expected to increase in the spring because of the significant effort needed to update the Monitoring Design and to write the FY 15/16 Workplan.

2. Governance

During the start-up phase of the Delta RMP, governance costs will be higher than for mature monitoring programs. Governance subtasks include facilitating the SC, TRC, and ad hoc workgroups. Both the SC and the TRC are planning to meet at least 3 times between January and June 2015. ASC activities to support these meetings will include preparing agendas, participating in meetings and writing summaries, tracking action items, reviewing minutes from past meetings, and coordinating with committee chairs.

The budget for this task is $61,289 (~$10,000 per month). The Water Board contract with ASC will cover $40,289 of the total, which will leave $21,000 to be paid by the Program Participants. The cost estimate is based on actual costs incurred in January and February 2015, during which the cost for Governance averaged $15,000 per month. The monthly cost is expected to decrease in the spring because there will only be 2 of the 6 scheduled SC and TRC meetings in the spring.

3. Data Management

Data management subtasks include A) data processing, quality assurance, and upload to CEDEN, and B) implementing a Quality Assurance System.

In FY 14-15, ASC data management staff will set up templates and Electronic Data Delivery (EDD) reports for the pesticide/toxicity and pathogen monitoring data. Staff will also train laboratories to use the templates.

Quality assurance is a critical foundation for the scientific investigations of the RMP. The initial quality assurance activity for FY14-15 is to develop a basic Quality Assurance Project Plan (QAPP) for Delta RMP monitoring. The QAPP will use existing documents prepared by contractors as a starting point. This initial plan will not include a detailed Data Quality Objectives discussion for the whole RMP.

The total cost for this task in FY 14/15 is $20,127. All of these costs will be covered by the Water Board contract with ASC. The actual results from the pesticide/toxicity and pathogen monitoring will be processed and quality assured in FY15-16. So, the FY 15/16 workplan will contain a proposal for the cost of these services.

4. Communications

Due to funding constraints, communications tasks have been postponed to FY 15/16.

The SC discussed the need for a communications plan. At the January 22, 2015 meeting, the SC agreed that the plan would define the Delta RMP's process for data analysis and interpretation, reporting, and application of results to address management questions. The plan will also contain a schedule for coordinating with participating organizations regarding their reports and information needs. The cost of this plan will be estimated for the FY 15/16 Workplan.

5. Current Use Pesticides (CUPs) and Toxicity Monitoring

Sampling Design

Monitoring for CUPs and toxicity will begin in May 2015. The goal is to complete two sampling events by the end of June. One event will be routine sampling at the 5 baseline sites. The five baseline sites are Mokelumne River at New Hope Road, Sacramento River at Hood, San Joaquin River at Buckley Cove, San Joaquin River at Vernalis, and Ulatis Creek at Brown Road. The other event will be a targeted sampling (for the "Second Irrigation Event") at the 5 baseline sites and 4 targeted sites. The four sites targeted for events-only sampling are American River at Discovery Park, Sacramento River at Rio Vista, Sacramento River at Veteran's Bridge, and Shag Slough at Liberty Island Bridge.

Parameters

At each site visit, the following measurements will be taken:

- Field parameters (water temperature, specific conductance, pH, and dissolved oxygen)
- Pesticides. The list of pesticides and degradates currently analyzed by USGS Pesticide Fate Research Group will be the initial list of target analytes.
- Dissolved copper, calcium and magnesium. Calcium and magnesium will be used to calculate Hardness, which is needed for evaluating the copper toxicity.
- Toxicity testing. The test species and endpoints to be used are *Selenastrum capricornutum* (growth), *Ceriodaphnia dubia* (survival and reproduction), *Hyalella azteca* (survival), and *Pimephales promelas* (larval survival and growth).

- Pesticides-focused TIEs (5 manipulation test including 8 treatments) may be initiated for samples exceeding 50% response for at least one toxicity endpoint. A total of 3 TIE samples may be submitted from the two sampling events in FY 14/15.

Subcontractors

ASC will subcontract with the U.S. Geological Survey (USGS) in the amount of $41,000 for collecting the samples and performing the chemical analyses (pesticide scans and dissolved copper, calcium, and magnesium). USGS has committed an additional $9,243 in matching funds to this effort in FY 4/15.

An existing subcontract between the Water Board and the UC Davis Aquatic Toxicology Laboratory (ATL) will be used to pay for the toxicity testing and TIEs. It is expected that $66,747 of the $200k in this contract will be used in FY 14/15. The in-kind contribution from this Water Board contract with ATL is not being tracked as an expense to the RMP. On Table 2, the lab expenses are shown as being offset by other funds.

Justifications for selecting these contractors are provided in Appendix A.

ASC Labor

ASC will develop and manage subcontracts, plan and coordinate sampling, make maps of sampling locations, and ensure delivery of samples to laboratories. ASC will also facilitate a TIE Subcommittee charged with making rapid case-by-case decision about whether and how to conduct TIEs. A total of $11,000 of labor costs are budgeted for this task. Data management costs are included under Task 3.

Summary

The total cost for two months of CUP/Toxicity monitoring will be $127,956. Of this total, $75,989 will be covered by the Water Board contract with ATL and USGS matching funds. Therefore, a total of $51,967 of Program Participant funds will be needed. A detailed breakdown of all the components of the CUP/Toxicity monitoring is presented in Table 2.

This budget is only for the first two sampling events. Subsequent sampling in July 2015 and after will be contingent upon SC approval of funding in the FY 15/16 workplan. Full implementation of the monitoring design over 12 months was previously estimated to cost approximately $600,000. Hopefully, this cost can be reduced in the proposal for the FY 15/16 workplan.

6. Nutrients Synthesis

For nutrients, the RMP will synthesize the wealth of currently available information to characterize baseline nutrient sources, cycling, and conditions. The data synthesis will serve to:

1. Improve our understanding of the spatial and temporal distribution of nutrients and nutrients-associated parameters in the system, and

2. Glean monitoring program development needs.

The nutrient synthesis will also identify knowledge gaps inhabiting better nutrient mass balance estimates and status & trends evaluations.

As part of this larger effort, the first step will be a synthesis report of the high-frequency measurements of nutrient-related parameters made by the USGS and others in the Delta. Analysis of this data has been recognized by the TAC as a high priority data gap.

ASC will subcontract with USGS in the amount of $70,000 to complete a nutrient synthesis report on high frequency sensor data. USGS has committed an additional $24,500 in matching funds for this work. The work will begin in FY 14/15 with a final report due by 12/31/15. The outline of the final report is provided in Appendix B. USGS is uniquely qualified to perform this work. A justification of selecting this contractor is provided in Appendix A.

The total cost of this task will be $70,000, all of which will be subcontracted to USGS. The workplan for FY 15/16 will propose additional nutrient synthesis tasks such as a summary of trends from grab sample monitoring, a summary of nutrient loads, and a monitoring design for nutrients.

7. Pathogen Study

The Central Valley Regional Water Quality Control Board adopted a Basin Plan Amendment to establish a Drinking Water Policy (Policy) to protect source water quality on July 26, 2013. The Policy includes a narrative water quality objective for two pathogens, *Cryptosporidium* and *Giardia*, with associated implementation and monitoring provisions, as well as language addressing other constituents of potential concern to drinking water. The Pathogen Study is intended to satisfy the data needs and monitoring for any follow-up required if Basin Plan trigger values are exceeded.

Year One of the Pathogen Study (April 2015 to March 2016) will focus on characterizing pathogen (*Cryptosporidium* and *Giardia*) levels throughout the Delta. The study includes monitoring at drinking water intakes and at ambient sites throughout the Delta. Sampling at drinking water intake location will be conducted and analyses of samples paid for by the water agencies. Sampling at ambient sites will be conducted by Department of Water Resources' Municipal Water Quality Investigations (MWQI) program at no cost to the RMP. The RMP will pay for analyses of ambient samples, data management, and reporting. Additional details on this study are provided in Appendix C.

A primary and a secondary laboratory certified for EPA Method 1623 for *Cryptosporidium* and *Giardia* will be contracted to perform the analyses. The primary laboratory (BioVir) will analyze all samples, and the secondary laboratory (Eurofins) will analyze inter-laboratory quality control samples. A justification for selecting the primary lab contractor is provided in Appendix A.

The total cost for this task is $72,000. All of these funds will be subcontracted to the primary and secondary laboratories. Data management costs are included under Task 3. The entire first year

of monitoring will be paid from the FY 14/15 budget. The workplan for the FY 15/16 budget will include a proposal to fund Year 2 of the study.

Monthly Budget and Cash Flow Analysis

Contributions from Program Participants to implement this workplan will arrive in the middle of FY 14/15 while implementation is already underway. Therefore, it is necessary to map out the Program expenses by month and compare this amount to the expected revenue for the month (Figure 2).

This analysis shows that by using Water Board contract funds for some tasks and delaying the CUP/Toxicity monitoring to May, the workplan can be implemented without negative cash flow in any month. Table 1 shows the detailed monthly budget and cash flow calculations.

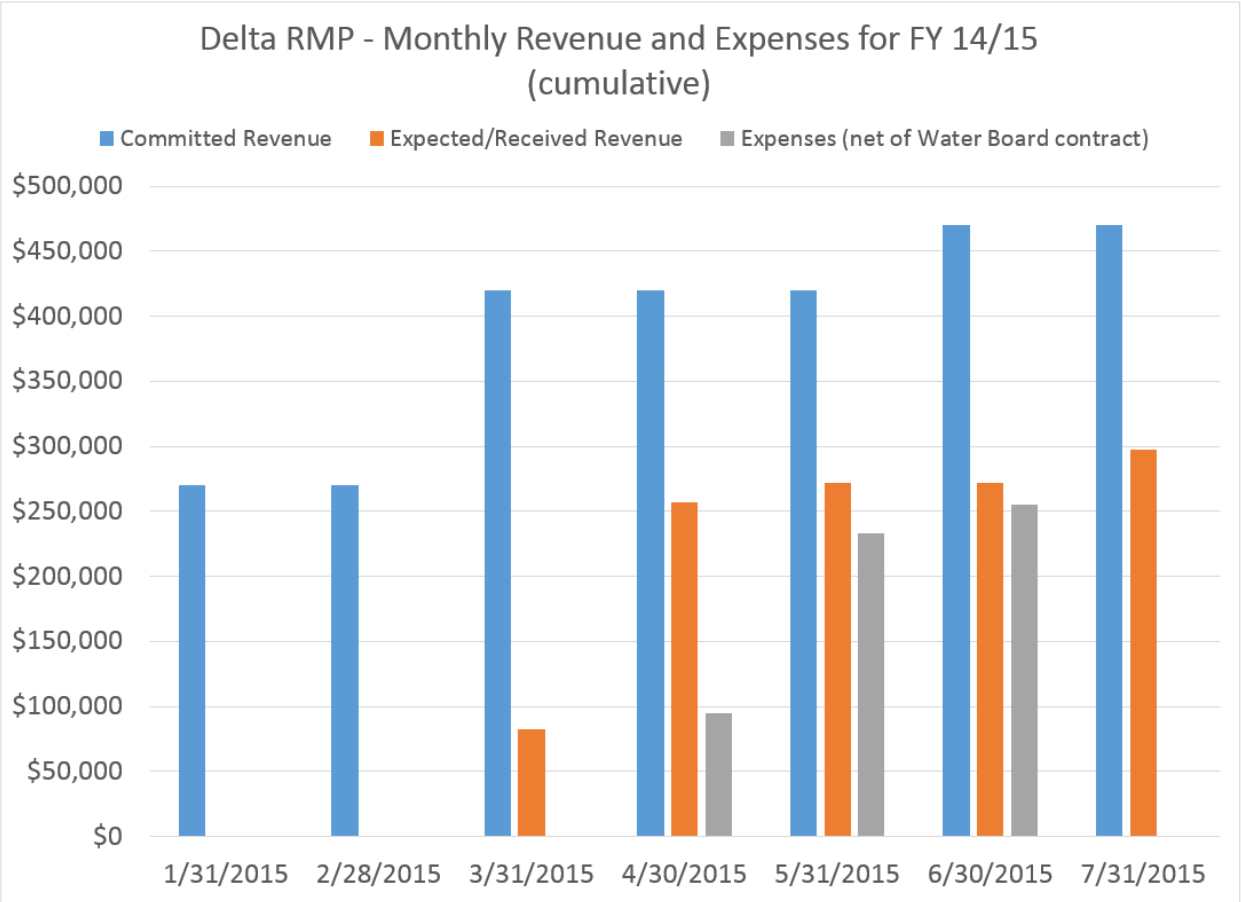


Figure 2: Delta RMP Cumulative Monthly Cash Flow Summary for FY 14/15. For each bar, the revenue (or expense) for the month and all of the months prior to that month were added together to calculate the cumulative revenue (or expense) since January 1, 2015. Expenses net of Water Board contract are the expenses that must be paid from Program Participant contributions because they cannot be covered by Water Board funds.

Table 1: Delta RMP Monthly Budget and Cash Flow Analysis for FY 14/15

(A) Monthly Budget

Line Item	Jan-15 Actuals	Feb-15 Actuals	Mar-15 Forecast	Apr-15 Forecast	May-15 Forecast	Jun-15 Forecast	FY 14/15 Total Forecast	Water Board Funds To Be Used	Participant Funds To Be Used	FY 14/15 Approved 6-mo Budget
Program Management	$3,276	$10,748	$10,000	$12,000	$12,000	$12,000	$60,024	$24,024	$36,000	$37,500
Governance	$19,245	$11,044	$10,000	$7,000	$7,000	$7,000	$61,289	$40,289	$21,000	$33,500
Communications	$0	$0	$0	$0	$0	$0	$0	$0	$0	$10,250
Data Management	$1,104	$23	$10,000	$0	$9,000	$0	$20,127	$20,127	$0	$20,500
Pesticide/Toxicity Montioring							$0		$0	$71,000
Logistics and Coordination				$4,000	$4,000	$3,000	$11,000		$11,000	
Field Sampling and Pesticide Lab					$41,000		$41,000		$41,000	
Toxicity/TIE Lab					$0		$0		$0	
Pathogens Study (Year 1)				$72,000			$72,000		$72,000	$18,000
Nutrient Synthesis (Sensor Data)					$70,000		$70,000		$70,000	$35,000
Total	$23,625	$21,815	$30,000	$95,000	$143,000	$22,000	$335,440	$84,440	$251,000	$225,750

Note: Expenses to be covered by Water Board contract funds are shown in TAN.

Note: Funding needed to execute subcontracts are shown in BLUE.

Note: FY 14/15 Approved Budget for Pesticide/Toxicity Monitoring was $166,700 formerly because it contained ATL toxicity costs and RFP costs.

(B) Monthly Cash Flow Analysis

	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
EXPENSES						
Total Monthly Expenses	$23,625	$21,815	$30,000	$95,000	$143,000	$22,000
Expenses covered by WB Contract	$23,625	$21,815	$30,000	$0	$9,000	$0
Participant Funding Needed	***$0***	***$0***	***$0***	***$95,000***	***$134,000***	***$22,000***
Funding Needed (cumulative)	***$0***	***$0***	***$0***	***$95,000***	***$229,000***	***$251,000***
REVENUE						
Participant Funds Received			$82,800			
Participant Funds Expected				$174,376	$15,000	
Total Participant Funds Available	***$0***	***$0***	***$82,800***	***$174,376***	***$15,000***	***$0***
Total Funds Available (cumulative)	***$0***	***$0***	***$82,800***	***$257,176***	***$272,176***	***$272,176***
SHORTFALL	$0	$0	$0	$0	$0	$0

Table 2: Detailed Budget for Pesticide and Toxicity Monitoring in FY 14/15 only (1 event at 5 baseline sites and 1 event at 9 sites)

Contractor	Parameter	Matrix	Fraction	Unit Cost	Number	Total Cost	RMP Funds	Other Funds	Comments
USGS	Pesticide Lab Analyses (plus 3 QA samples)	Water	Dissolved	$2,060	17	$35,020	$35,020		
USGS	Pesticide data formatting and reporting	Water		$8,055		$8,055	$0	$8,055	USGS match (23%) on labor for costs associated with project administration, formatting of pesticide analysis results for CEDEN database entry, and preparation of reports to the cooperator.
USGS	Field Sampling Costs - 7 routine events at 5 sites	Water		$1,815	1	$1,815	$1,419	$396	USGS match (25%) on labor
USGS	Field Sampling Costs - 5 targeted events at 9 sites	Water		$3,600	1	$3,600	$2,808	$792	USGS match (25%) on labor
USGS	Field parameters (temp, conductance, pH, DO)	Water		$0	17	$0	$0		Cost is part of field sampling labor
USGS	Copper Lab Analyses (plus 3 QA samples)	Water	Dissolved	$20	17	$340	$340		
USGS	Calcium and Magnesium (plus 3 QA samples)	Water	Dissolved	$40	17	$680	$680		Calcium and Magnesium will be used to measure Hardness for evaluating copper toxicity.
USGS	Supplies (yearly cost)	Water				$700	$700		
ATL	Toxicity Testing (plus 2 QA samples)	Water		$3,755	16	$60,080	$0	$60,080	All samples paid from SWAMP contract.
ATL	TIE Analyses	Water			3	$6,667	$0	$6,667	Assuming 1/6 of $40,000 cap. Paid from SWAMP contract.
ASC	Logistics and Coordination					$11,000	$11,000		Logistics, planning, sampling coordination, and facilitating the TIE subcommittee.
	TOTAL					**$127,956**	**$51,967**	**$75,989**	

APPENDIX A
Justifications for Contractor Selections

SFEI AQUATIC SCIENCE CENTER

Vendor Selection Form

In order to provide open and free competition and to obtain the maximum value for each dollar expended, SFEI-ASC has a competitive bidding policy for purchasing services or goods greater than or equal to $50,000. In addition, positive efforts shall be made by SFEI-ASC to utilize small business, minority owned firms, and women business enterprises, whenever possible. Such efforts, as outlined in 45 CFR Part 74.44 will allow these sources the maximum feasible opportunity to compete for contracts. SFEI-ASC will use, but not be limited to, the State of California DBE online directory as a source for possible references: http://www.dot.ca.gov/hq/bep/find_certified.htm

Submit this form, along with original quotes, to the Program Director or Executive Director for review. Original documents go to the Contracts Manager for retention. An electronic copy will be made available on the shared drive.

Date: 2/19/15 *Requestor*: Philip Trowbridge

Stage of funding for vendor: ☐ Proposal ☒ In negotiations ☐ Contracted

Program: Delta RMP *Project/Task # (if known)*: 8111.15

☐ I have obtained at least three (3) competitive quotes and have chosen the supplier based on price, reliability, delivery, service, or other factors (attach quotes). If chosen vendor is not lowest cost bidder, detail the reason(s) why the vendor was selected on the next page.

VENDOR	Date of Quote	Total $	Comments
USGS		$245,000	Cost in FY 14/15 is $41,000

Vendor Selected:

Vendor Name: U.S. Geological Survey, Pesticide Fate Research Group
Contact: James Orlando and Joe Domagalski
Address: 6000 J. Street, Sacramento, CA 95819
Phone: 916-278-3271 Fax: Email: jorlando@usgs.gov and joed@usgs.gov

Reason for Selection (explanation required below):

☐ Vendor is the lowest cost provider
☐ Vendor provided best overall offer
☐ Vendor is sole provider
☒ Vendor is sole acceptable provider
☐ Emergency/Urgency
☐ Other

Explanation (attach additional information if necessary):

The Delta Regional Monitoring Program (Delta RMP) was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions.

Research on Current Use Pesticides (CUPs) in the Delta is one of four focus areas for the Delta RMP. On January 22, 2015, the Delta RMP Steering Committee agreed to fund monitoring for CUPs in FY 14/15 and FY 15/16. ASC staff recommend a **sole source** subcontract with the U.S. Geological Survey (USGS) for this work because of the following:

- The specialized nature of the proposed work, which is research outside the domain of typical contractors.
- The USGS' unique technical capability to monitor a large list of CUPs. The USGS has an extensive publication record on pesticide analysis (see http://ca.water.usgs.gov/projects/PFRG/Publications.html) and measures more pesticides than other laboratories. In addition to doing the pesticide analyses, USGS will collect the samples and measure field parameters. Having USGS involved in the field and lab work ensures good coordination and chain of custody for the samples. ASC obtained a second quote for the field sampling work and found that the USGS was the lower cost option.
- Matching funds offered by USGS. The USGS has agreed to provide matching funds of at least $56,000. These funds will be used to cover labor costs associated with project administration, formatting of pesticide analysis results for CEDEN database entry, and preparation of reports to the cooperator.

At its meeting on January 22, 2015, the Steering Committee generally agreed that there was sufficient justification for this subcontract on a sole source basis. However, the Steering Committee asked for a sole source justification and confirmation that the subcontract would be in compliance with applicable laws or ordinances for spending public monies. There was also concern about an actual or apparent conflict of interest since USGS staff serve as one of the two co-chairs of the Delta RMP Technical Advisory Committee, which had recommended USGS for this work. Each of these concerns are addressed below:

- Sole Source Justification: The reasons why USGS is the sole acceptable provider are outlined in the paragraph above.
- Legality: The Delta RMP is not required to follow the State Contracting Manual because the Delta RMP is not funded by state monies. However, the State Contracting Manual provides a reasonable guide to follow since the alternative is attempting to comply with dozens of different municipal ordinances and individual institutional requirements. Per the Manual under Section 3.06, "Agreements for services and consultant services do not require competitive bids or proposals if the contract is with…The Federal Government". Yet to provide further protection, ASC still must follow internal procedures to justify and receive approval from its Executive Director for any sole source contracts in the amount of $50,000 or more, which is the purpose of this memo.

- Conflict of Interest: It was recognized, after the fact, that the USGS Co-Chair of the Technical Advisory Committee should have recused himself from the discussion that recommended USGS for this work. This process oversight was openly acknowledged and discussed by the Steering Committee. Going forward, the Steering Committee agreed that the Technical Advisory Committee should not recommend specific contractors to avoid the appearance of a conflict of interest.

The Delta RMP must begin its work to monitor water quality in the Delta during the spring of 2015. The Steering Committee identified the CUP monitoring task as a priority for implementation. Staff recommend a sole source contract with USGS because this agency is the sole acceptable provider for the work. Solicitation of more competitive bids would delay implementation of the program.

We respectfully request your approval.

To be completed by Program Director or Executive Director

☐Yes ☐No The vendor quote(s)/explanation have been reviewed and appear reasonable for the proposed work.

Philip Trowbridge, P.E.
Requestor's Printed / Typed Name

_____ _____
Requestor's Signature Date

_____ _____
Program Director or Executive Director's Signature Date

_____ _____
Contracts Manager's Signature Date

SFEI AQUATIC SCIENCE CENTER

Vendor Selection Form

In order to provide open and free competition and to obtain the maximum value for each dollar expended, SFEI-ASC has a competitive bidding policy for purchasing services or goods greater than or equal to $50,000. In addition, positive efforts shall be made by SFEI-ASC to utilize small business, minority owned firms, and women business enterprises, whenever possible. Such efforts, as outlined in 45 CFR Part 74.44 will allow these sources the maximum feasible opportunity to compete for contracts. SFEI-ASC will use, but not be limited to, the State of California DBE online directory as a source for possible references: http://www.dot.ca.gov/hq/bep/find_certified.htm

Submit this form, along with original quotes, to the Program Director or Executive Director for review. Original documents go to the Contracts Manager for retention. An electronic copy will be made available on the shared drive.

Date: 2/19/15 *Requestor*: Philip Trowbridge

Stage of funding for vendor: ☐ Proposal ☒ In negotiations ☐ Contracted

Program: Delta RMP *Project/Task # (if known)*: 8111.15

☐ I have obtained at least three (3) competitive quotes and have chosen the supplier based on price, reliability, delivery, service, or other factors (attach quotes). If chosen vendor is not lowest cost bidder, detail the reason(s) why the vendor was selected on the next page.

VENDOR	Date of Quote	Total $	Comments
USGS		$70,000	

Vendor Selected:

Vendor Name: U.S. Geological Survey
Contact: Brian Bergamaschi
Address: Placer Hall, 6000 J St, Sacramento, CA 95819
Phone: (916) 278-3053 Fax: Email: bbergama@usgs.gov

Reason for Selection (explanation required below):

☐ Vendor is the lowest cost provider
☐ Vendor provided best overall offer
☐ Vendor is sole provider
☒ Vendor is sole acceptable provider
☐ Emergency/Urgency
☐ Other

Explanation (attach additional information if necessary):

The Delta Regional Monitoring Program (Delta RMP) was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions.

Research on nutrients in the Delta is one of four focus areas for the Delta RMP. On January 22, 2015, the Delta RMP Steering Committee agreed to fund a synthesis of nutrient data in FY 14/15 and FY 15/16. In particular, the Steering Committee agreed to start with a synthesis of continuous sensor measurements of nutrients in the Delta. ASC staff recommend a **sole source** subcontract with the U.S. Geological Survey (USGS) for this work because of the following:

- The specialized nature of the proposed synthesis work, which is research outside the domain of typical contractors.
- The USGS' specialized expertise and access to unpublished sensor data. The USGS operates 8 moored sensor stations in the Delta and has used boat-mounted sensors to map water quality using flow through systems. The USGS has an extensive publication record on moored sensors (see https://profile.usgs.gov/professional/mypage.php?rfs=y&name=bbergama) and has already developed and applied methodology, capacities, and expertise to analyze and evaluate sensor data.
- Matching funds offered by USGS. The USGS has agreed to provide 35% match to the project ($24,500 value).

At its meeting on January 22, 2015, the Steering Committee generally agreed that there was sufficient justification for this subcontract on a sole source basis. However, the Steering Committee asked for a sole source justification and confirmation that the subcontract would be in compliance with applicable laws or ordinances for spending public monies. There was also concern about an actual or apparent conflict of interest since USGS staff serve as one of the two co-chairs of the Delta RMP Technical Advisory Committee, which had recommended USGS for this work. Each of these concerns are addressed below:

- Sole Source Justification: The reasons why USGS is the sole acceptable provider are outlined in the paragraph above.
- Legality: The Delta RMP is not required to follow the State Contracting Manual because the Delta RMP is not funded by state monies. However, the State Contracting Manual provides a reasonable guide to follow since the alternative is attempting to comply with dozens of different municipal ordinances and individual institutional requirements. Per the Manual under Section 3.06, "Agreements for services and consultant services do not require competitive bids or proposals if the contract is with…The Federal Government". Yet to provide further protection, ASC still must follow internal procedures to justify and receive approval from its Executive Director for any sole source contracts in the amount of $50,000 or more, which is the purpose of this memo.
- Conflict of Interest: It was recognized, after the fact, that the USGS Co-Chair of the Technical Advisory Committee should have recused himself from the discussion that

recommended USGS for this work. This process oversight was openly acknowledged and discussed by the Steering Committee. Going forward, the Steering Committee agreed that the Technical Advisory Committee should not recommend specific contractors to avoid the appearance of a conflict of interest.

The Delta RMP must begin its work to monitor water quality in the Delta during the spring of 2015. The Steering Committee identified the nutrient synthesis task as a priority for implementation. Staff recommend a sole source contract with USGS because this agency is the sole acceptable provider for the work. Solicitation of more competitive bids would delay implementation of the program.

We respectfully request your approval.

To be completed by Program Director or Executive Director

☐Yes ☐No The vendor quote(s)/explanation have been reviewed and appear reasonable for the proposed work.

Philip Trowbridge, P.E.
Requestor's Printed / Typed Name

Requestor's Signature — Date

Program Director or Executive Director's Signature — Date

Contracts Manager's Signature — Date

SFEI | AQUATIC SCIENCE CENTER

Vendor Selection Form

In order to provide open and free competition and to obtain the maximum value for each dollar expended, SFEI-ASC has a competitive bidding policy for purchasing services or goods greater than or equal to $50,000. In addition, positive efforts shall be made by SFEI-ASC to utilize small business, minority owned firms, and women business enterprises, whenever possible. Such efforts, as outlined in 45 CFR Part 74.44 will allow these sources the maximum feasible opportunity to compete for contracts. SFEI-ASC will use, but not be limited to, the State of California DBE online directory as a source for possible references: http://www.dot.ca.gov/hq/bep/find_certified.htm

Submit this form, along with original quotes, to the Program Director or Executive Director for review. Original documents go to the Contracts Manager for retention. An electronic copy will be made available on the shared drive.

Date: 2/19/15 *Requestor*: Philip Trowbridge

Stage of funding for vendor: ☐ Proposal ☒ In negotiations ☐ Contracted

Program: Delta RMP *Project/Task # (if known)*: 8111.15

☐ I have obtained at least three (3) competitive quotes and have chosen the supplier based on price, reliability, delivery, service, or other factors (attach quotes). If chosen vendor is not lowest cost bidder, detail the reason(s) why the vendor was selected on the next page.

VENDOR	Date of Quote	Total $	Comments
Biovir	3/4/15	$62,000	

Vendor Selected:

Vendor Name: BioVir Laboratories
Contact: Elizabeth Mamo

Address: 685 Stone Road, Benecia, CA 94510
Phone: (707) 747-5906 Fax: Email: elizabeth.mamo@iehinc.com

Reason for Selection (explanation required below):

☐ Vendor is the lowest cost provider
☐ Vendor provided best overall offer
☐ Vendor is sole provider
☒ Vendor is sole acceptable provider
☐ Emergency/Urgency
☐ Other

Explanation (attach additional information if necessary):

The Delta Regional Monitoring Program (Delta RMP) was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions.

Research on pathogens in the Delta is one of four focus areas for the Delta RMP. On January 22, 2015, the Delta RMP Steering Committee agreed to fund monitoring for pathogens in FY 14/15 and FY 15/16. ASC staff recommend a **sole source** subcontract with the BioVir Laboratories for this work because of the following:

- The ASC subcontract will implement a part of a much larger Long Term 2 Enhanced Surface Water Treatment Rule (LT2) monitoring plan developed by the Drinking Water Policy Work Group and the DWR Municipal Water Quality Investigations section to monitor pathogens in the Delta. BioVir Laboratories is part of this existing program and will provide the most comparability to other data, since BioVir will already be handling and analyzing other samples from this study. The ASC Purchasing Policy is that competitive bids are not required for a project that is a joint venture already specified in a proposal or a regular participant in existing monitoring programs, such as this case.
- Biovir is on the list of laboratories that may be used by public water systems for LT2 monitoring. (http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/upload/lt2cryptolablist150123.pdf).

The Delta RMP must begin its work to monitor water quality in the Delta during the spring of 2015. The Steering Committee identified the pathogens monitoring task as a priority for implementation. Staff recommend a sole source contract with BioVir because this vendor is the sole acceptable provider for the work. Solicitation of more competitive bids would delay implementation of the program.

We respectfully request your approval.

To be completed by Program Director or Executive Director

☐ Yes ☐ No The vendor quote(s)/explanation have been reviewed and appear reasonable for the proposed work.

Philip Trowbridge, P.E.
Requestor's Printed / Typed Name

Requestor's Signature — Date

Program Director or Executive Director's Signature — Date

Contracts Manager's Signature — Date

From: Laputz, Adam@Waterboards
Sent: Friday, February 20, 2015 9:11 AM

To: scottogle@pacificecorisk.com
Cc: Laputz, Adam@Waterboards; Morris, Patrick@Waterboards; Cole, Selina D.@Waterboards; dornl@sacsewer.com;TPirondini@cityofvacaville.com; 'jtellers@cityofdavis.org' (jtellers@cityofdavis.org); Margaret.Orr@stocktongov.com; michaelkw@msn.com;bruceh@norcalwater.org; amayod@SacCounty.NET
Subject: RE: Toxicity testing services for the Delta RMP

Dear Dr. Ogle (bcc: Steering Committee),

The Delta Regional Monitoring Program (Delta RMP) Steering Committee co-chairs would first like to express our appreciation for the two years of participation by Stephen Clark and Dr. Brant Jorgenson in the Delta RMP meetings. The following information is in response to concerns you raised regarding the use of SWAMP funds for toxicity testing, which can only be performed under contract through the University of California, Davis (UCD) ATL lab. The Steering Committee appreciates PER's input on this issue and is committed to continuing this productive relationship. The Co-chairs accept PER's offer to work with us on identifying additional avenues for finding funding for the Delta RMP.

We would like to assure you a very broad net was cast to determine what funds might be available to apply to the Delta RMPneeds. The only existing Central Valley Regional Board (Regional Board) SWAMP resource that is compatible with the DeltaRMP Monitoring Design and available for the 2014/2015 FY is the $200,000 in a contract with ATL. While there are many other statewide SWAMP contracts that exist, the Regional Board does not have access to all of them. There is a rigorous process by which each of the nine Regional Boards across the state request for a portion of these statewide funds. As mentioned in your email, the California Department of Fish and Wildlife (CDFW) WPCL lab managed by Dave Crane does have an existing SWAMP contract for analytical chemistry, but the Central Valley Regional Board does not currently have an allocation for these funds. In addition, the San Francisco Estuary Institute (SFEI) SWAMP contract for data management will expire in June 2015, after which all of the Board's SWAMP data management will be conducted internally per new state requirements.

The Regional Board proposed the use of the existing $200,000 SWAMP contract with ATL for a number of reasons. Currently, the only SWAMP funds available in FY 14/15 that match the monitoring design of the Delta RMP is the $200,000 in a contract with UCD ATL for toxicity analysis. Even if there were other FY 14/15 SWAMP funds available, additional time would be needed to write a new contract, go through the bidding process, and then work with the State Water Board for approval –the entire process takes approximately 1-year. Secondly, the UCD ATL lab has been contracted with SWAMP for at least 15 years and has extensive experience in aquatic toxicology. There have not been any issues with turnaround times, reporting, or follow-up testing. Also of importance for Central Valley Water Board contracting is the Civil Service Consideration (Gov. Code 19130), which requires contracting through a state entity before pursuing contracts with non-governmental entities. The Board must go through a rigorous process of evaluating state agencies capabilities before contracting outside of the state system. Lastly, using the current RMP monitoring design does not require that SWAMP funds must be used for toxicitytesting in subsequent years. Data consistency was brought up at the

Steering Committee meeting, and there are several labs including PER that can perform this work.

The Committee agrees that changing laboratories is an option should funding options be found that better allocate resources. Since this year's SWAMP funding is limited to the ATL, next year we can look into more options for SWAMP funding for other monitoring needs. Should the Steering Committee determine that the additional cost of using the SWAMP funded ATL contract is less fiscally beneficial for FY 15/16, then we will certainly consider using another funding source and laboratory for the monitoring.

It is a priority of the RMP to establish a high-quality monitoring program that will develop water quality data necessary for improving our understanding of Delta water quality issues. The Delta Regional Monitoring Program is a stakeholder-directed program and the decision was made by the Steering Committee to go forward with the existing SWAMP contract funding for FY 14/15. If the topic needs to be revisited, then the Steering Committee Co-chairs will make that assessment and add it to the next meeting agenda. We would like to meet with PER to discuss this further and to chart a path forward that is in the best interest of the Delta RMP and most fiscally responsible use of available funding.

Sincerely,

Delta RMP Co-Chairs

Adam Laputz, Central Valley Regional Water Quality Control Board

Linda Dorn, Regional San

APPENDIX B
Outline for USGS Nutrient Synthesis Report

PROPOSED REPORT OUTLINE, 3-05-2015

REPORT TITLE: High frequency nutrient monitoring in the Delta

1 Summary

- Summary of report findings

2 Purpose and scope of document

- Overall goals of the document
- What is covered in the document
- Define and explain what nutrients and what related parameters are included in the document and why
- Types of data included in the document
- In general terms, where the data presented in the document are collected
- Major intended uses of the information and data presented

3 Introduction

- New technologies that permit high-frequency measurement of nutrients
- Operational theories behind optical measurements.
- Introduction to the concept of multi-parameter flux-based monitoring
- Discussion of what can be measured and at what frequency
- Discussion of what parameters should and/or must be measured together and why

3.1 Review of uses of high frequency data in monitoring

- When, why and where high-frequency sensor measurements are useful with examples (e.g. aliasing)
- How high-frequency data have been used with examples from the literature.

3.1.1 Use of high frequency measurements to quantify loads

- How, where and why high-frequency measurements improve quantification of loads with examples from the literature.

3.1.2 Use of high frequency measurements in mapping campaigns

- Discussion of how high-frequency measurements permit high resolution mapping of spatial distribution with examples from the literature.

3.1.3 Overview of uses of HF monitoring system data

- Discussion of the many uses HF data may be put to. Some discussion likely presented in table form.

Topics

- Real-time data availability: concentrations, ratios,](e.g, NO3-N:NH4-N; N:P; DOC:DON), fluxes, sources/sinks, transformations etc.
- Temporally vs. spatially intensive data collection

- Source discrimination
- Primary productivity
- Light, nutrients, initial phyto concentration, residence time, water depth
- Models:
    - BGC models,
    - Coupled transport/BGC models
- Seasonal Trends
- Effects of drought / flood
- Long term trends
- Effects of operational changes (e.g. flows, barriers, wetland restoration)
- Targeted deployment/campaigns

4 How HF measurements help identify and understand links between nutrients, physical dynamics & aquatic biology in the Bay Delta

- Case studies of how data from HF measurements in the Delta have been used.

4.1 Phytoplankton blooms

- Case study from Sacramento River at Decker Island showing production in the estuary and transport into the lower Sacramento River

4.2 Blue-green production

- Case study from Liberty Island showing production in long-residence time water.

4.3 Linkage between nitrate, chlorophyll and DO

- Case study from Liberty Island showing the biogeochemical linkages between parameters.

4.4 Environmental stoichiometry

- Case study from Sacramento river showing changes in nitrate, ammonium and phosphate

4.5 Nitrate mapping

- Case study from Cache Slough complex showing variation of nitrate concentrations in space and time.

5 Current HF monitoring in the Delta

- *Presented as maps and tables with short discussion*
- *USGS BGC WQ monitoring stations*
- *NAWQA*
- *DWR data*
- *Short-term deployments*
- *Other*
- *Information types provided by current stations*

6 Review and analysis of existing sensor data

6.1 Presentation and review of data records from available fixed stations

- *USGS Nutrient Stations: Freeport, Walnut Grove, Lower Cache Slough, Sac R at Decker Island, Liberty Island, Liberty Cut, Deep Water Ship Channel, Toe Drain*
- *Fixed Station Summary table(s): station locations, parameter lists, dates established,*
- *Temporary Stations (defined as < 1 year)*

6.2 Discussion

Topics

- Moored sensors (chl-a, DO, and NO3 data)
- When are blooms occurring?
- When are DO sags occurring?
- What are the dynamics of nutrients related to that?
- Mapping data
- Steepest gradients
- Anticipated changes to nutrient concentrations in the Delta (e.g. Regional San)

7 Strategies, technologies and techniques for high frequency monitoring

- Light technical discussion of theoretical and practical considerations in deploying networks of high frequency nutrient sensor platforms.

7.1 Sensor types

- Currently In Use in the Delta: Specifically describe sensors for nitrate, ammonium, phosphate, dissolved organic nitrogen, dissolved organic phosphate, dissolved organic carbon, DO and pigments.
- In Development

7.2 Instrument choice

7.3 Deployment considerations

7.3.1 Site considerations

7.3.2 Power consumption

7.4 Calibration

7.5 Operation and Maintenance

7.5.1 Estimated cost for O&M

7.6 Data Considerations

7.6.1 QA/QC

7.6.2 Corrections

7.6.3 Data Storage, Access and Visualization

7.7 Resources

- Short bibliography of available information for deployment and maintenance of instrument networks

8 High Frequency Nutrient Monitoring Networks in the Future

8.1 Future needs for monitoring data

- Discussion of future uses of network monitoring data
- Discussion of nutrient field changes in other estuaries
- General discussion of adaptive management data needs in the Delta

8.2 Future potential changes to nutrient loads

- Discussion of projected future nutrient loadings to Delta

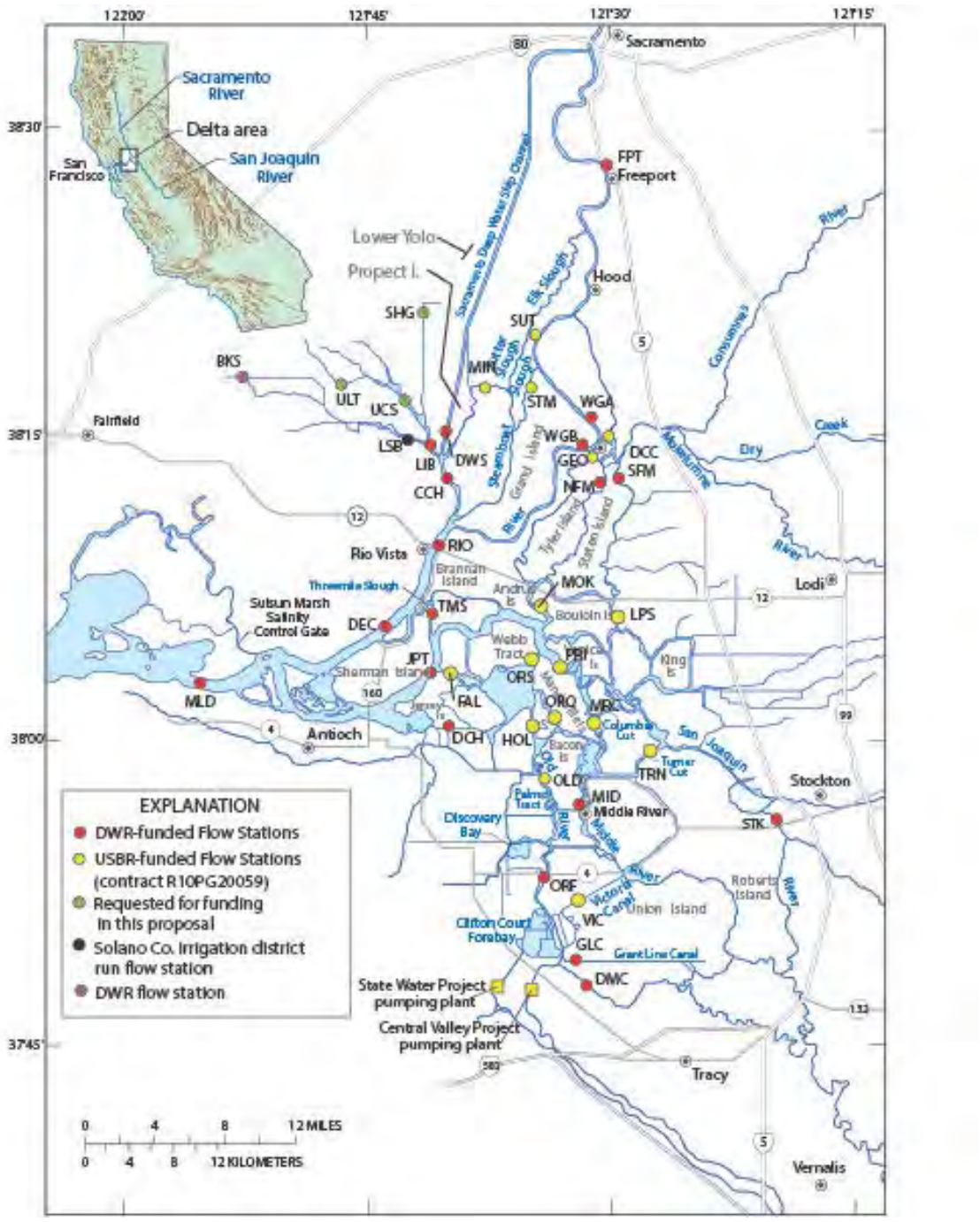
8.3 Recommendations

- What have we learned to suggest doing similar things in other places?
- Do Liberty Island sites need to be replicated? Where? Why?
- Maps showing hypothetical future monitoring designs/scenarios
- Ballpark costs
- What CAN be done in a future monitoring program? I.e. what is possible (fixed stations and roving boats)

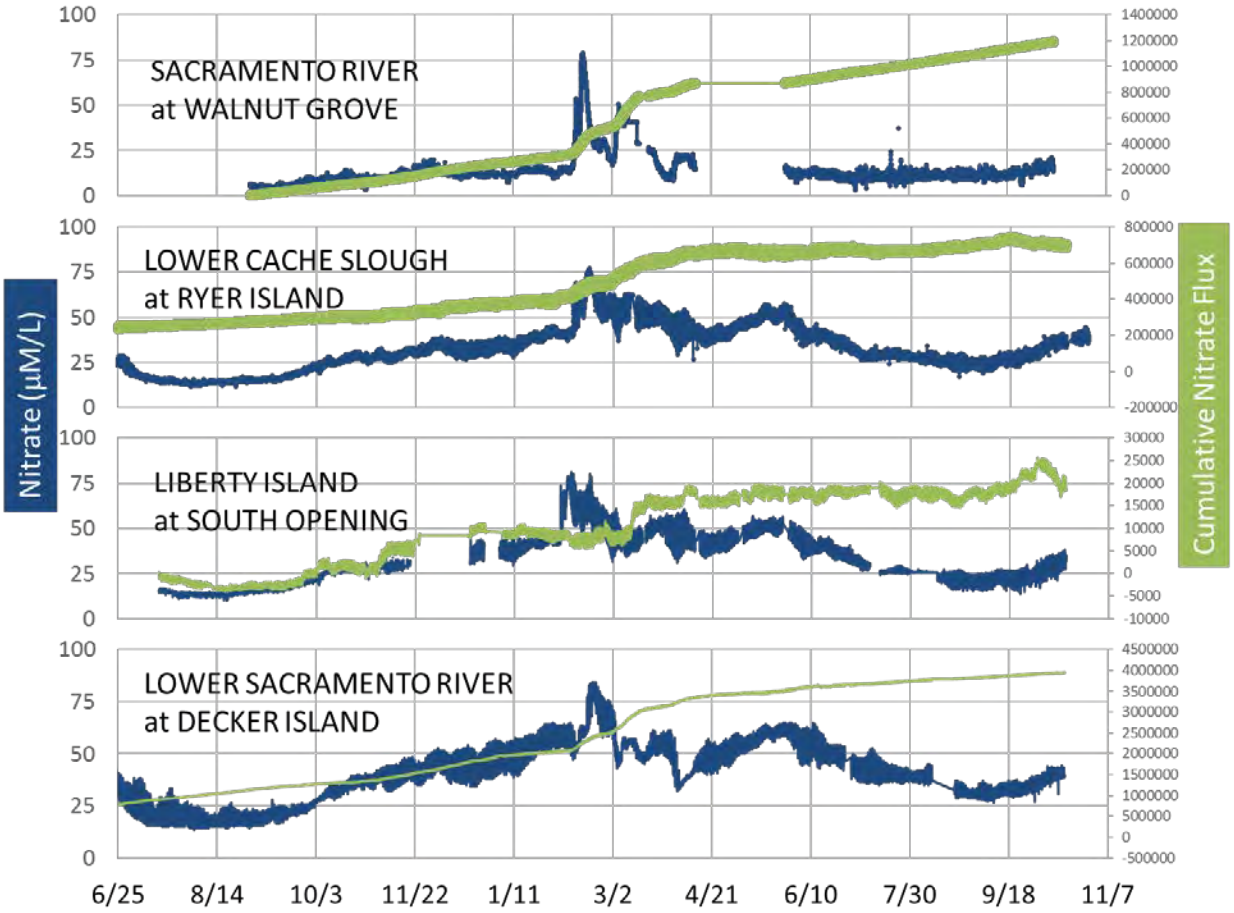
8.4 Description of potential future monitoring program

- Maps and discussion of suggestions and scenarios for future monitoring networks.
- Different commitment levels
- Order of importance

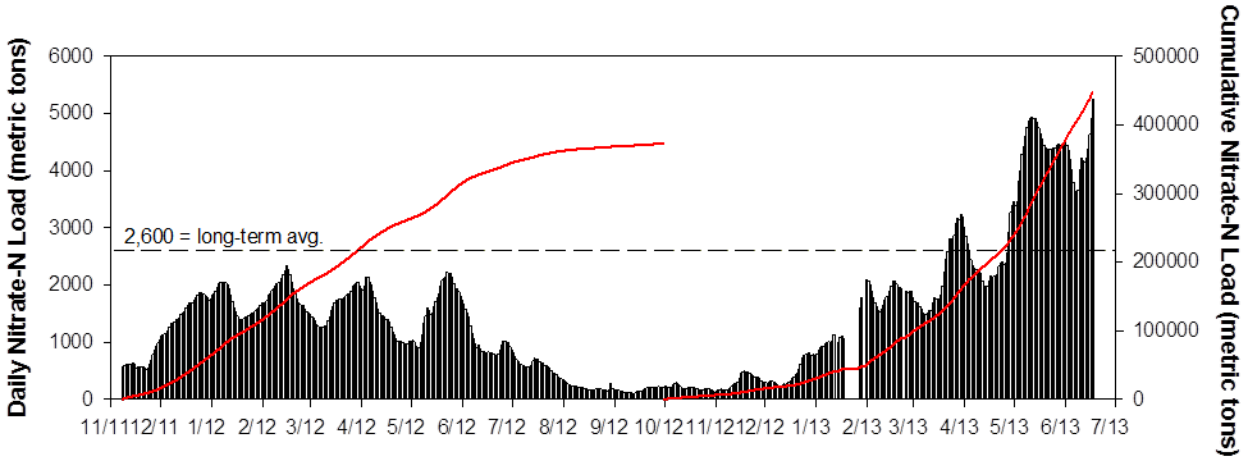
EXAMPLE FIGURES PRESENTED ON THE FOLLOWING PAGES



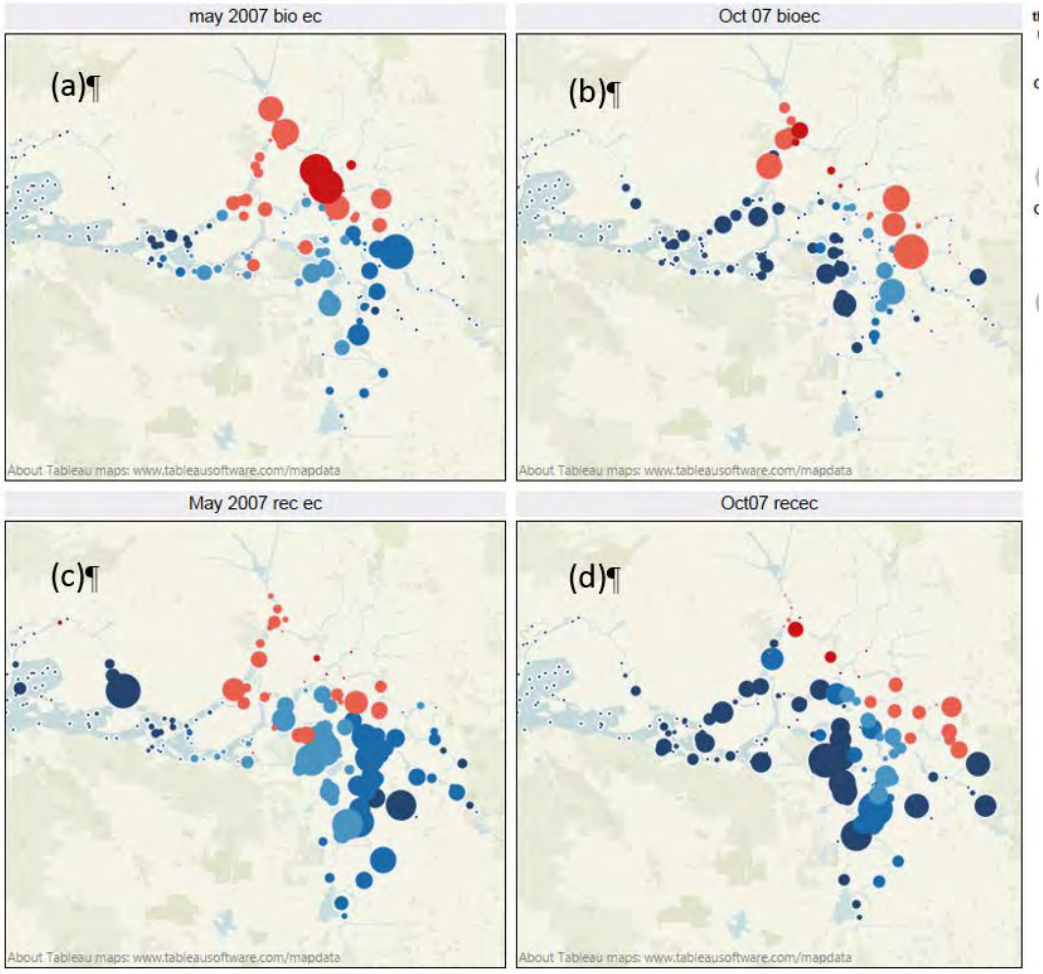
Example of the type of map that will be used to indicate current stations and capabilities as well as to indicate future recommended monitoring locations. (Courtesy of Jon Burau and Tara morgan)



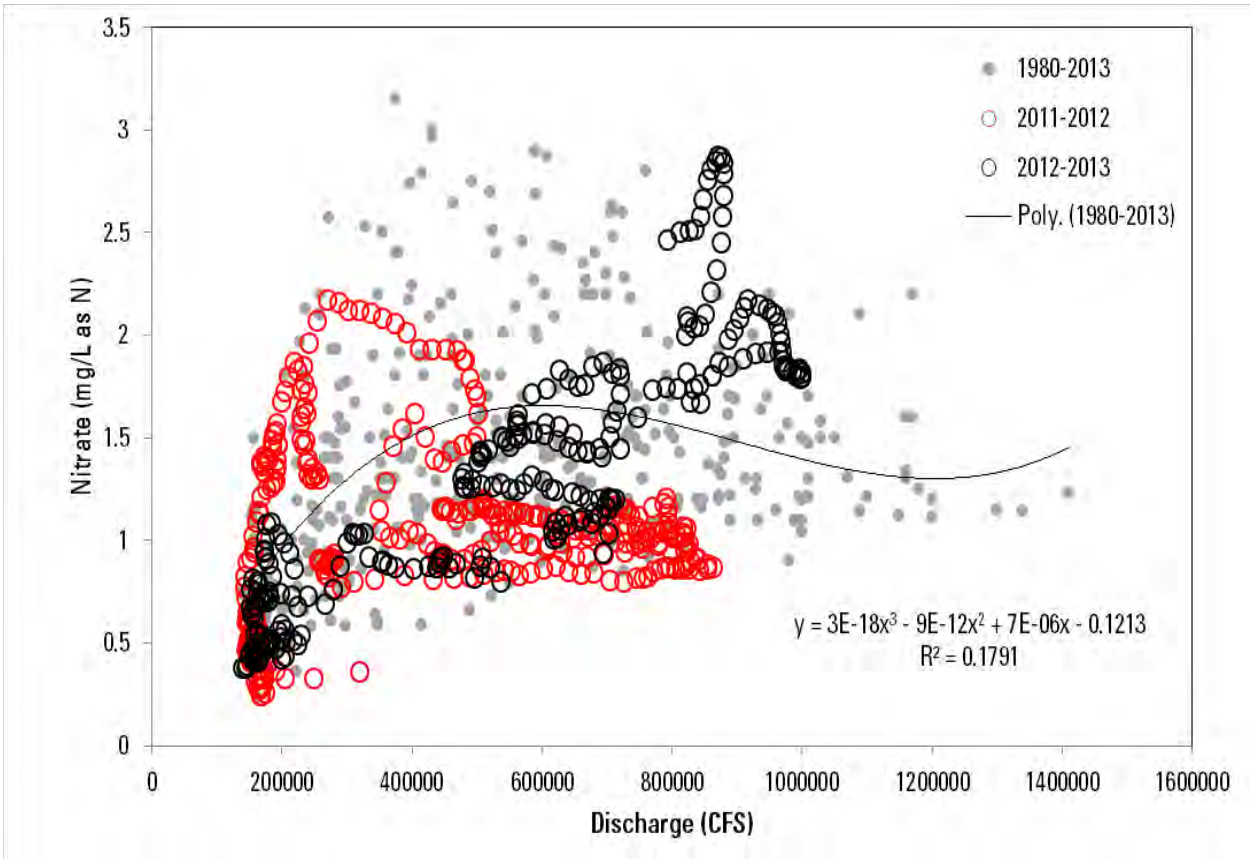
Example of plots used to summarize time series plots of high frequency data



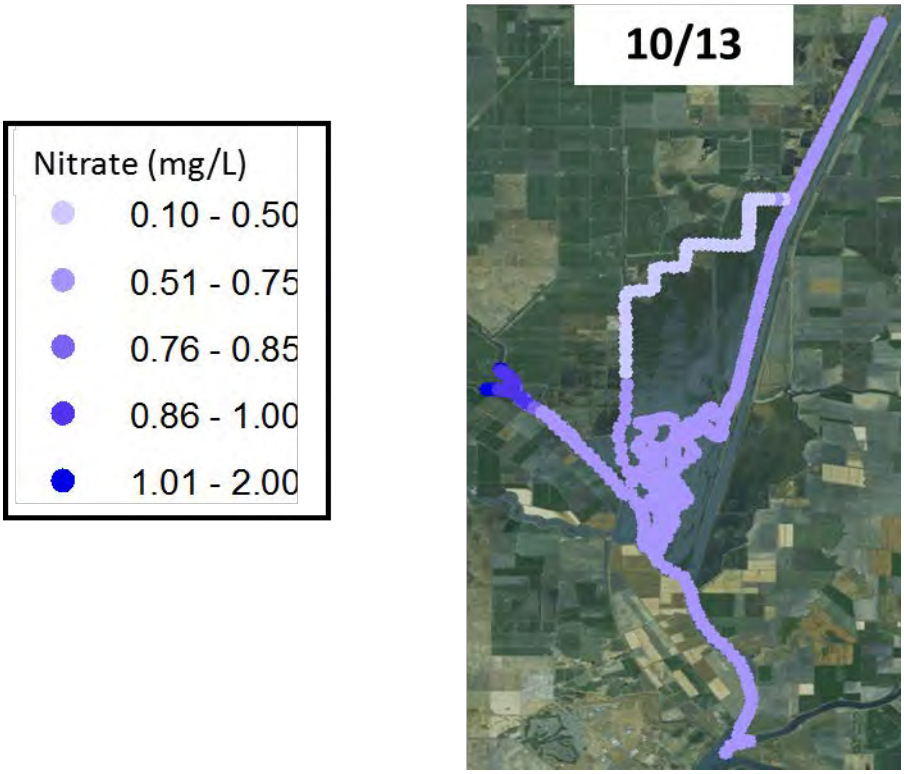
Example time series plot showing daily and cumulative loads for nitrate.



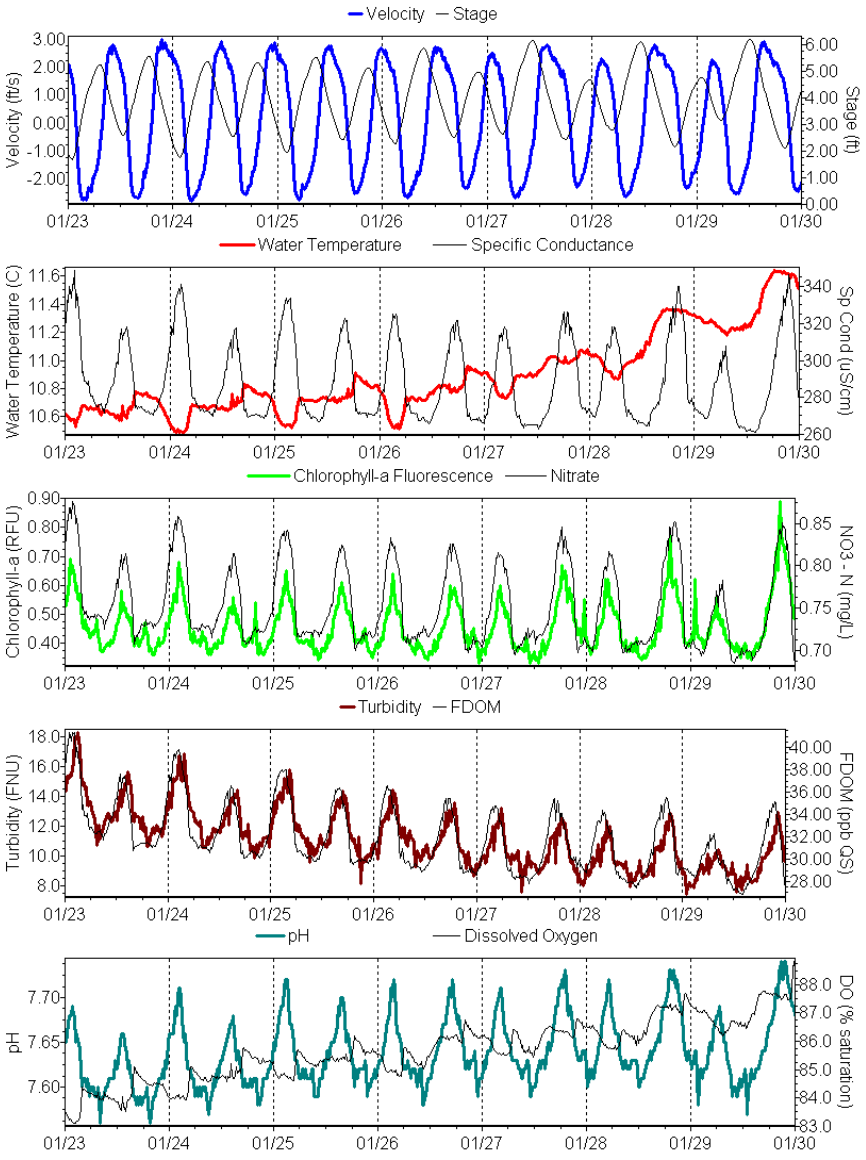
Example of type of map that will be used to show summary high frequency concentration data (Courtesy of Jan Thompson).



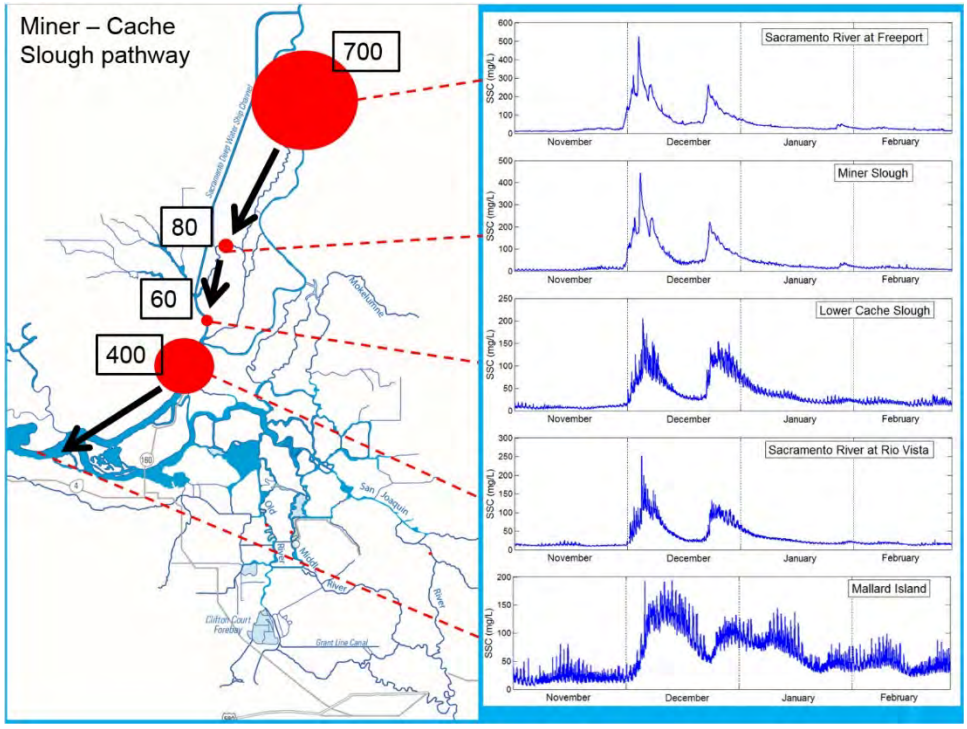
Example plot showing relationship between concentration and discharge, comparing discrete and continuous data.



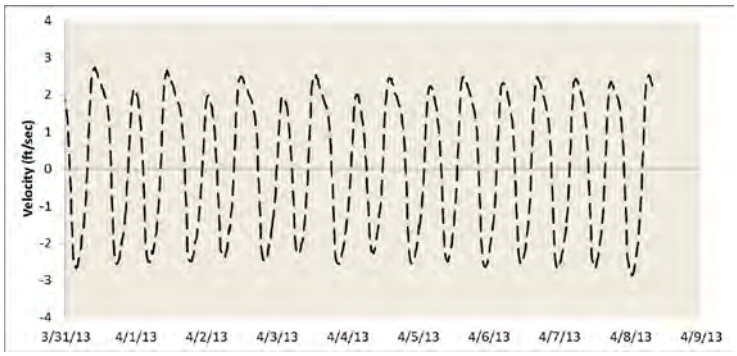
Example presentation of high frequency nitrate mapping data

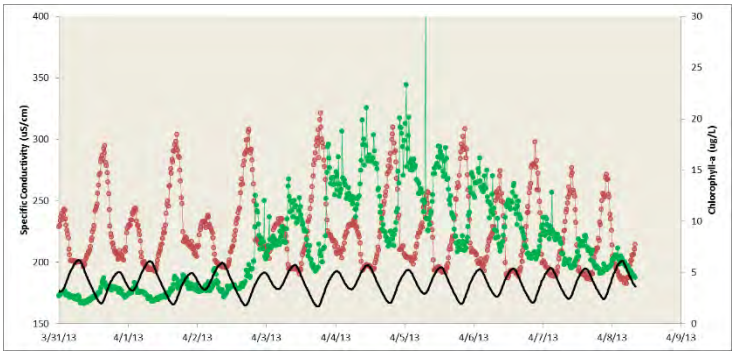


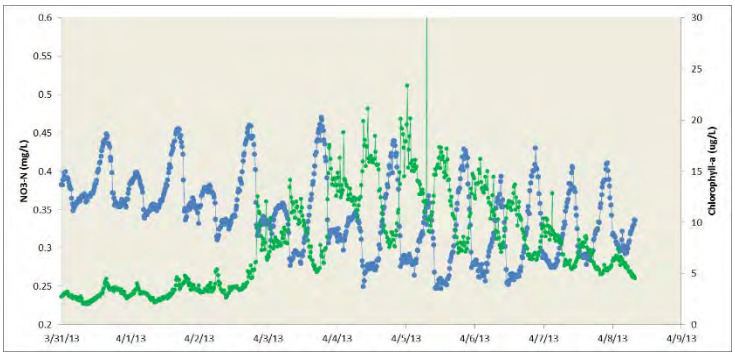
Example of stacked time-series plots used to show interaction between biogochemically-relevant parameters.



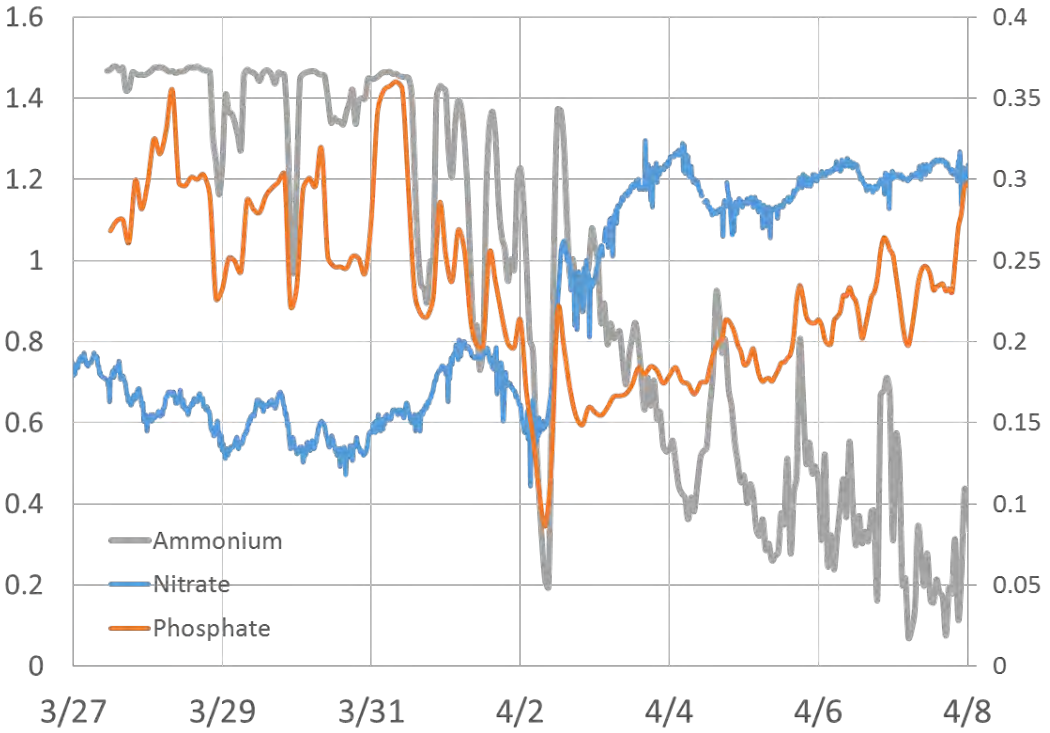
Example of the type of presentation that will be used to relate time series plots to regional fluxes and processes (Courtesy of Scott Wright, USGS).







Example of the types of time-series plots used to demonstrate interactions between nutrients and other parameters as well as how they are related to physical drivers such as tidal currents.



Example of type of time series plot used to show interactions between nutrient types.

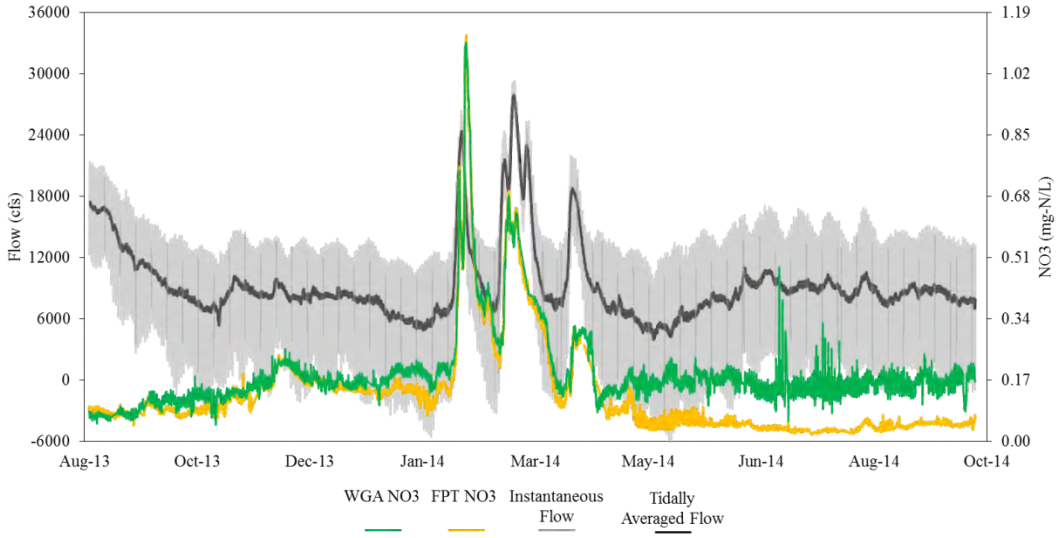


Figure 3. Instantaneous flow (black) and tidally averaged flow (grey) of the Sacramento River flow at Freeport (FPT) plotted with nitrate concentrations measured at the continuous monitoring stations located at FPT (yellow) and Walnut Grove (WGA, green).

Example of how “paired stations” located at different points on a river reach can track changes in constituent concentrations with downstream travel. (Waltng Grove (WGA) is approximately 30 km downstream from Freeport (FPT)).

APPENDIX C

Delta RMP Pathogen Study Cryptosporidium and Giardia Sampling

Delta RMP Pathogen Study *Cryptosporidium* and *Giardia* Sampling

Samples will be collected for the Delta RMP Pathogen Study following the general field procedures described in the Municipal Water Quality Investigations (MWQI) Program Field Manual. Specific protocols for *Cryptosporidium* and *Giardia* sampling per EPA Method 1623 are described below, along with sample handling procedures for the RMP Pathogen Study. The study is performed as a joint collaboration between MWQI, the Central Valley Drinking Water Policy Workgroup, and the Delta Regional Monitoring Program (RMP). The Central Valley Drinking Water Policy Workgroup is comprised of stakeholders including but not limited to California Urban Water Agencies, the City of Sacramento, Sacramento Regional County Sanitation District, the Central Valley Regional Water Quality Control Board, Metropolitan Water Districts of Southern California, and other parties. Not all stakeholders are required to participate in the Delta RMP Pathogen Study. The Delta RMP is a stakeholder funded collaborative monitoring group.

Sample Collection

The Delta RMP Pathogen Study Design Summary specifies monthly ambient monitoring sample collection for two years beginning in April 2015 to match the Long Term 2 Enhanced Surface Water Treatment Rule (LT2)-required water supply intake sample collection.

MWQI will collect grab samples at each of the locations shown in **Table A-1** during the first week of each month on the site-specific day. MWQI may postpone or cancel sample collection due to safety or logistical concerns. MWQI will collect one field duplicate sample per event on a sequentially rotating site schedule. MWQI will fill one 10-L cubitainer for each sample and shipped to the laboratory on ice for analysis by EPA Method 1623. Specifications for sample handling are shown in **Table A-2**.

Equipment

The following equipment is necessary in addition to the standard MWQI equipment requirements:

- 10-L Collapsible low-density polyethylene (LDPE) cubitainer (Cole Parmer cat. no. U-06100-30 or equivalent).
- Stainless steel bucket
- Stainless steel cable & quick link
- Stainless steel funnel

Sample Collection Procedure

MWQI will use a stainless steel bucket and a stainless steel funnel for grab sampling. MWQI will rinse sampling devices twice with ambient water prior to sampling. Sampling devices will be decontaminated between stations by rinsing with de-ionized (DI) water. MWQI Sample Collection Teams will fill out field data sheets immediately after sample collection. All sample containers will be labeled with the date, location sampled or unique station ID, parameter to be measured, and sample preparation (unfiltered).

Sample collection will be performed as follows:

1. Once on site, ensure that you are located in the correct sampling location.
2. Connect stainless steel bucket (bucket) to stainless steel cable with quick link.

3. Lower bucket into sample stream at sample collection depth (3 feet). Agitate bucket at depth to replace bucket water with at-depth sample water.
4. Pull up bucket and dump (rinse 1 complete).
5. Repeat sample collection process (Step 3).
6. Pull up bucket and use some of this water to rinse funnel, twice.
7. Dump bucket (rinse 2 complete).
8. Repeat sample collection process (Step 3).
9. Pull up bucket and fill sample cubetainer, having second staff member hold funnel in place and handle cubetainer.
10. Repeat (Step 3) as necessary, until cubetainer is full.
11. Remove air from cubetainer by squeezing until sample rises to opening.
12. Install sample cap.
13. Using Sharpie pen, label cap with sample location.
14. Place sample on ice immediately, and store on ice or in a refrigerator between 1°C and 10°C.
15. Enter data on appropriate field sheet including sample collection time.
16. Rinse sampling equipment twice with deionized water before moving on to next site.

After run completion, at MWQI Field Office:

17. Fill out water proof sample label with sample location, sample ID number, collection date and time, and label as "unfiltered".
18. Attach label to proper sample cubetainer. Dry surface before attaching. Tape over label with packing tape to ensure adhesion.
19. Complete Chain of Custody (COC) and prepare samples and COC for pick up by courier.

Table A-6. Delta RMP Pathogen Study Ambient Monitoring Locations

Location ID	Description	Cross Sectional Location	Sampling Location	Sample Day
MWQI #14	Colusa Basin Ag Drain	Near shore	Catwalk	Monday
MWQI #1	Natomas East Main Drainage Canal	Mid-channel	Bridge	Monday
MWQI #18	Sacramento River at Westin Boat Dock	¼ channel	Boat dock	Tuesday
MWQI #4	Sacramento River at Hood	¼ channel	Catwalk	Tuesday
MWQI #20	Cache Slough near Ryder Island	Mid-channel	Boat	Tuesday
MWQI #16	Mokelumne River at Benson's Ferry	¼ channel	Bridge	Tuesday
MWQI #17	Calaveras River at UOP Footbridge	Mid-channel	Bridge	Tuesday
MWQI #10	Rock Slough at CCWD Fish Facility	Near shore	Catwalk	Monday
MWQI #7	Old River at Bacon Island	Near shore	Boat Dock	Monday
MWQI #9	Banks Pumping Plant	Mid-channel	Catwalk	Wednesday

Location ID	Description	Cross Sectional Location	Sampling Location	Sample Day
MWQI #12	Jones Pumping Plant	Near shore	Catwalk	Wednesday
MWQI #6	San Joaquin River near Vernalis	Near shore	Catwalk	Tuesday

Sample Shipment

Analytical laboratories and contact information are shown in Table **A-3.** A courier will deliver samples to Biovir (primary lab). The courier will deliver one field duplicate sample per event to Eurofins (secondary lab). Samples must be kept on ice. The laboratory must elute the samples within 96 hours (4 days) of sample collection.

Table A-7. **Delta RMP Pathogen Study Sample Handling Specifications**

Parameter	Method	Sample Prep	Sample Size	Container	Preservative	Hold Time
Cryptosporidium and *Giardia* Count	EPA 1623	unfiltered	10 L	Polyethylene cubitainer	1˚ - 10˚ C	96 hours

Table A-8. Analytical Laboratories and Contact Information

Analytical Lab	Address	Contact	Courier
Biovir (Primary)	685 Stone Road Benicia, CA 94510	Richard Danielson red@biovir.com 707 747 5906	TBD
Eurofins (Secondary)	Sample filtration: 180 Blue Ravine Road, Suite B Folsom, CA 95630 Analytical: 110 South Hill Street South Bend, IN 46617	Rick Zimmer RickZimmer@eurofinsUS.com 949 540 6723 Mobile: 949 466 8266	Provided

Table A-9. Roles and Responsibilities

Role and Contacts	Responsibilities
Field Collection Coordinator Steven San Julian, MWQI Field Section Supervisor, steven.sanjulian@water.ca.gov office: 916.371.2284 mobile: 209.482.1320	• Procure necessary sample collection equipment, including sample containers • Prepare sample collection logistics • Notify Delta RMP Pathogen Study Liaison of scheduling changes • Oversee sample collection by MWQI Sample Collection Team Leads • Transfer samples to analytical lab using couriers • Submit chain of custody forms and relevant field logs to Pathogen Study Liaison
Sample Collection Team Leads Arin Conner arin.conner@water.c.agov, office ph. 916.371.3121 Travis Brown travis.brown@water.ca.gov, office ph. 916.375.6809 Jeremy Del Cid Jeremy.delcid@water.ca.gov, office ph. 916.371.3118	• Lead in-field sample collection efforts according to the work plan, MWQI field manual, and applicable health and safety plans • Note all variances to the work plan and field manual • Notify Field Collection Coordinator of significant problems, safety issues or delays • Complete chain of custody requirements • Complete standard MWQI field log sheets • Deliver samples to MWQI staging area for hand-off with courier
Drinking Water Agency Liaison Elaine Archibald office: 916.736.3713 elaine.archibald@comcast.net	• Track water agency LT2 sample collection schedule and activities • Request and compile drinking water agency data. • Calculate likely bin levels from drinking water intake data, starting when 8 months of data are available
Delta RMP Pathogen Study Liaison Brian Laurenson, LWA brianl@lwa.com office: 530.753.6400 ext. 230 mobile: 530.601.0451	• Notify Delta RMP TAC and operating entity of sample collection schedule • Arrange for couriers to deliver ambient samples to analytical lab, and coordinate with analytical lab for sample delivery • Review chain of custody forms for completeness and conformity to Delta RMP study plan • Respond to technical questions from laboratory or Delta RMP TAC and operating entity
Delta RMP Operating Entity Thomas Jabusch Aquatic Science Center thomas@sfei.org 510.746.7340	• Payment of laboratory and courier costs • Review of monitoring activities and consistency check with Delta RMP sample collection and data evaluation protocols • Compile ambient water intake laboratory data, perform QA/QC for ambient data, and upload to CEDEN through regional data center • Produce data summary products • Communicate input and direction from Delta RMP Steering Committee and TAC to Delta RMP Pathogen Study Liaison
Central Valley Drinking Water Policy Workgroup	• After collection of 8-12 months of data, evaluate data for Year 2 special studies according to process in monitoring plan • Develop Year 2 study plan

Financial Management Plan

Concerning the Implementation of the

Delta Regional Monitoring Program

1. PURPOSE

This document establishes the processes that will be used to manage the finances of the Delta Regional Monitoring Program (~~Program~~Delta RMP).

2. BACKGROUND

~~Many agencies and groups monitor water quality, water flows, and ecological conditions in the Bay-Delta, but there is no comprehensive contaminants monitoring and assessment program. The Interagency Ecological Program and other organizations, including the Water Boards, conduct some of these analyses, but due to their specific mandates, information gaps exist. Concerns exist with contaminants that may be related to the decline of pelagic organisms in the Delta, wastewater treatment plant discharges, agricultural discharges, pesticides, blue-green algae toxicity, and unknown toxicity events. Mercury bioaccumulation, and other issues all highlight the need for well-coordinated contaminant monitoring. A system is needed for coordinating among monitoring programs and integrating contaminants monitoring into existing monitoring efforts whereby all data are synthesized and assessed on a regular basis. The Strategic Workplan for Activities in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, which was adopted by the State Water Board, Central Valley Regional Water Board, and San Francisco Bay Regional Water Board, identifies the development of a comprehensive monitoring program for the Delta as a priority action. A Delta Regional Monitoring Program is also recommended in the Delta Plan adopted by the Delta Stewardship Council in 2013.~~The Delta RMP was initiated by the Central Valley Regional Water Quality Control Board with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. The development of the Delta RMP was initially prompted by the collapse of the populations of several species of fish in the early 2000s, an event that triggered new inquiries into the potential role of contaminants in what is now termed the Pelagic Organism Decline (POD). However, these inquiries highlighted shortcomings of existing monitoring efforts to address questions at the scale of the Delta. The recognition that data from current monitoring programs were inadequate in coverage, could not easily be combined, and were not adequate to support a rigorous analysis of the role of contaminants in the POD persuaded regulatory agencies of the need to improve coordination across multiple monitoring programs. In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions. Many stressors on beneficial uses are interrelated and must be addressed more holistically. The Delta RMP is one of the priority actions of the Bay-Delta Strategic Workplan, which responds to a joint resolution of the State Water Board and the Central Valley and San Francisco Bay Regional Water Boards.[P1]

3. DEFINITIONS

3.1. *Delta Regional Monitoring Program* (hereinto referred to as "Delta RMP" or "the Program"). The Delta RMP is a stakeholder effort to provide improved Delta monitoring and data evaluation. The decision-making body of the Delta RMP is the Delta RMP Steering Committee.

3.2. *Program Participants* are those entities that provide adequate financial contributions and/or in-kind services that directly support Delta RMP activities. All waste dischargers with the potential to impact Delta water quality will be encouraged to, and have the option to, participate in the Delta RMP. Agencies and groups who are not waste dischargers, but use or have an interest in Delta waters, may also participate in the Delta RMP.

3.3. *Steering Committee*. The core responsibilities and authorities of the Steering Committee are to determine the overall budget, allocate program funds, track progress, and provide direction to the Program from a manager's perspective. The membership and governance procedures of the Steering Committee are defined in the Guiding Principles and Committee Roles for the Program available at: http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/comprehensive_monitoring_program/index.shtml.

3.4. *Aquatic Science Center (ASC)* is a joint powers agency, created July 1, 2007, by a Joint Powers Agreement between the Bay Area Clean Water Agencies and the State Water Resources Control Board for the purpose of assisting with the efficient delivery of financial, scientific, monitoring, and information management support functions.

3.5. The *Implementing Entity* for the Delta RMP will be the Aquatic Science Center. In this role, ASC will be responsible for implementing the Program activities and serving as treasurer for the Program.

3.6. *Annual Program Workplan* is the detailed plan of activities and budget for implementing the Program each year as approved by the Steering Committee.

3.7. *Cost Allocation Schedule* is the document, developed by the Program Participants and approved by the Steering Committee, which specifies the amount that each program participant will contribute to the program each year.

4. PROGRAM ACTIVITIES AND BUDGET

The total cost of this Program and the Annual Program Workplan will be set annually by the Steering Committee.

Each Program Participant will pay a portion of those costs, according to the Cost Allocation Schedule that will be developed by the Steering Committee. Some Program Participants may provide specialized in-kind services, such as sampling staff and equipment, analyses in their agency laboratories, or use of existing agency contracts for laboratory services, in the place of cash payments for their portion of the Program costs.

5. PROGRAM IMPLEMENTATION

The Implementing Entity will be responsible for implementing the Annual Program Workplan in a technically sound and cost-effective manner and, therefore, will:

- Conduct work required to fulfill the Annual Program Workplan to the extent that funds from Program Participants are available; and
- Enter into and manage contracts to fulfill the Annual Program Workplan to the extent that funds are available.

The Implementing Entity and Program Participants shall use the following process for selecting contractors.

For contracts ~~amount of~~exceeding $50,000, a competitive process ~~or more~~ will be required. Proposals may be obtained through a formal Request for Proposals or by soliciting at least three proposals from qualified contractors. For highly specialized work, it may only be possible to obtain proposals from two contractors. The requirement for a competitive process may be waived when there is only one source for the merchandise or service needed and no other product/service meets the stated need or specifications. Criteria for justifying a sole source contract include but are not limited to the following:

- ~~Interagency agreements with other public entities,~~
- Unique or specialized technical expertise,
- Unique or specialized access to data or information,
- Joint venture already specified in a proposal, or
- Access to matching funds or in-kind services.

For all sole source contracts ~~in the amount of~~exceeding $50,000 ~~or more~~, the Executive Director of ASC must approve a vendor selection justification.

A competitive process will not be required for in-kind services offered by Program Participants using their existing contractors or contractors selected through the State contracting process.

The contracts between the Program Participants and ASC as the Implementing Entity do not require a competitive process. This practice is consistent with the State Contracting Manual (Volume 1, Sections

3.06 and 5.80). State contracts with an organization acting as a governmental agency under a joint powers agreement are statutorily exempt from the requirement for a competitive bid process.

- All Program Participants serving on Delta RMP committees shall avoid both actual and perceived conflicts of interest when selecting contractors. Any committee member with an actual or perceived conflict of interest in a contract has a duty to disclose this interest to the committee and to recuse himself/herself from the decision. In order to avoid potential conflicts of interest with technical contractors, the Technical Advisory Committee shall not recommend specific contractors, but may provide criteria to be used in the contractor selection process. Additional details about handling conflicts of interest by public officials are available in Government Code Sections 1090-1099.

6. INVOICES AND FISCAL MANAGEMENT

The Implementing Entity will serve as the treasurer for the Program and, therefore, will:

- Set up an account for funds received for the purpose of execution of the Program.
- Invoice the Program Participants for their share of the costs;
- Provide each Program Participant with a letter that documents the amount that it has paid into the Program each year;
- Keep adequate financial records of all transactions relating to the execution of the Program and make these records available to all Program Participants upon request; and
- Report to the Steering Committee quarterly regarding status of the Program finances, including the status of payments from each Program Participant, expenditures, and budget remaining.

In the event that there are excess funds at the conclusion of the budget year, they will be applied to subsequent years of Program implementation with approval from the Steering committee.

In the event that funds are insufficient to carry out the Annual Program Workplan, including reasonable program management costs, the Implementing Entity will propose amendments to the Annual Program Workplan such that it can be implemented within the budget, or propose to use other sources of funds, such as interest or matching funds, to complete the program.

DRAFT-Adequate Participation in the Delta RMP

Adequate participation ~~implies~~ includes participating ~~financial~~financially ~~participation,~~ either through direct payments or in-kind services.~~.~~

- The total program budget will be set by the Steering Committee. The budget needs to consider the actual funds contributed, and the budget must be voted on by only those that actually contribute.
- A participant (or participant group) will be deemed to have adequate participation in the Delta RMP if their financial or in-kind participation is reasonably equivalent to the exchange of costs of discontinued individual monitoring and study efforts. For participants that do not have permits that require monitoring, adequate participation consists of funding or in-kind services contributed to the RMP that are reasonably equivalent to the cost of data and information that those agencies would have otherwise invested for their individual studies.
- Each participant group will be responsible to fund ~~a certain percent~~some amount of the total program budget to be approved by the Steering Committee. These ~~percentages~~ amounts will ~~be~~initially be determined for permittees, defined as Steering Committee members that have NPDES or WDR permits, by exchanging existing monitoring requirements in their permits, after approval by the Regional Board. ~~negotiated by the Steering Committee.~~ Non permittee Steering Committee members will determine what they can provide in funding through either direct payments or in kind services. In kind services do not include participation on the Steering Committee (SC), or Technical Advisory Committee (TAC), or any subcommittees formed by either the SC or TAC.
-
- After the initial exchange of monitoring for funding, ~~E~~each participant group will develop their own formula for the expected contribution for each of its members using objective measures such as:
    - total population in service area (e.g. stormwater, water supply),
    - permitted flow and level of treatment~~load allocations (as in the Delta MeHg TMDL or the Bay RMP), or total volume of water discharged~~ (e.g., POTWs)~~.~~,
    - Acres of irrigated agricultural (e.g. irrigated lands program)
- A participant will be deemed to have adequate participation in the Delta RMP if they contribute funds to the program equal to or exceeding their expected contribution.
- In-kind contributions may count towards a participant's contribution, but only if they can be monetized and replace a cost that the program would have to pay otherwise. An in-kind contribution would need to meet two basic yet fundamental criteria:
    - ~~a.~~ It has to replace an expense in the approved program budget.

~~b.~~o It has to be voted on and agreed to by the SC.

- ~~Staff time at program meetings shall not be considered an in-kind contribution.~~

DRAFT-February 9, 2015

A. General Process for Establishing RMP Participation

1. Steering Committee develops and approves workplan and budget using the state fiscal year, based on the Technical Advisory Committee recommendations for the monitoring program and the funding provided by steps 2-5.
~~2. Steering Committee determines participant group contribution targets *~~
2. Each participant group determines individual entity contribution. Each participant group will develop their own formula for the expected contribution for each of its members using objective measures such as:
    a) Total population in service area (e.g. stormwater, water supply),
    b) Permitted flow and level of treatment (e.g., POTWs),
    c) Load allocations (as in the Delta MeHg TMDL or the Bay RMP),
    d) Acres of irrigated agricultural (e.g. irrigated lands program).
~~3. *~~

~~<One time process for permittees reducing receiving water monitoring to participate in the RMP – see B below>~~

~~4.~~3.~~S~~Steering Committee approves revised budgets~~targets~~, if needed – based on findings of step ~~3~~2 above, and individual contributions, such as in kind services that may be provided by the Interagency Ecological Program (e.g. Coordinated Monitoring participant).
4. Steering Committee maintains list of active participants providing funding, through reporting by Aquatic Science Center.
5. Initial funding, a onetime process for permittees, which are Steering Committee members with NPDES and WDR permits, is provided by reducing receiving water monitoring in individual NPDES and WDR permits and is approved by the Regional Board (see B below).

~~5. (i.e., adequate participation)~~

~~*It would be ideal if an algorithm could be approved for these steps so that it would not need to be considered in detail each year, just when changes would be needed.~~

B. Regional Board Process for Modifying Permit Requirements (one time process)

1. Regional Board amends permits to allow RMP participation in lieu of certain monitoring
2. Permittee submits letter requesting reduction of specific monitoring and proposed RMP contribution
3. Regional Board evaluates the proposed contribution to see if it is consistent with the proposed monitoring reduction
4. Regional Board approves reduction in individual monitoring
5. Regional Board approval is provided to Steering Committee, which is responsible for final approval of contribution amounts to establish the budget ~~(see steps A.4 and A.5 above)~~

The Delta Regional Monitoring Program (RMP)

The Delta RMP was initiated by the Central Valley Regional Water Quality Control Board (Regional Water Board) with the primary goal of tracking and documenting the effectiveness of beneficial use protection and restoration efforts through comprehensive monitoring of water quality constituents and their effects in the Delta. The development of the Delta RMP was initially prompted by the collapse of the populations of several species of fish in the early 2000s, an event that triggered new inquiries into the potential role of contaminants in what is now termed the Pelagic Organism Decline (POD). However, these inquiries highlighted shortcomings of existing monitoring efforts to address questions at the scale of the Delta. The recognition that data from current monitoring programs were inadequate in coverage, could not easily be combined, and were not adequate to support a rigorous analysis of the role of contaminants in the POD persuaded regulatory agencies of the need to improve coordination across multiple monitoring programs.

In addition, the Delta RMP reflects an increasing desire among water quality and resource managers throughout the state for more integrated information about patterns and trends in ambient conditions across watersheds and regions. In addition, many stressors on beneficial uses are interrelated and must be addressed more holistically. The Delta RMP can be seen as a complement to existing larger-scale collaborative monitoring efforts throughout the state that attempt to address questions and concerns about regional conditions and trends (e.g., San Francisco Bay RMP, Southern California Bight Monitoring Program, Surface Water Ambient Monitoring Program).

The Delta RMP is one of the priority actions of the Bay-Delta Strategic Workplan[1], which

[1] California Water Board. 2008. Strategic Workplan for Activities in the San Francisco Bay/Sacramento- San Joaquin Delta Estuary.
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/strategic_plan/docs/baydelta_workplan_final.pdf

responds to a joint resolution of the State Water Board and the Central Valley and San Francisco Bay Regional Water Boards[2]. The Delta RMP Steering Committee (SC) was formed in 2012. Subsequently, the SC appointed the two initial Technical Advisory Committee (TAC) co-chairs (Joe Domagalski, U.S. Geological Survey [USGS], and Stephen McCord, McCord Environmental Inc. [MEI]) and a TAC. The SC also appointed the Aquatic Science Center (ASC) as the interim implementing entity. Further work resulted in agreements on the goals and objectives of the Delta RMP and a Management Questions Framework to guide monitoring and assessment at the regional scale. Work to date has also helped to identify a program structure and the initial program priorities (current use pesticides, mercury, nutrients, and a pathogens special study). Since 2011, the Central Valley Regional Water Board and NPDES (National Pollution Discharge Elimination System) permittees have been working on options for modifying receiving water monitoring of regulated dischargers to make it more efficient and allow the shifting of resources to address regional questions. In October 2014, the Central Valley Regional Water Board passed a resolution that allows for participation in the Delta RMP by NPDES dischargers in lieu of individual receiving water compliance monitoring.

Steering Committee

The core responsibilities and authorities of the Steering Committee (SC) are to determine the overall budget, allocate program funds, track progress, and provide direction to the Program from a manager's perspective. The SC will meet quarterly.

The Delta RMP Steering Committee is the decision-making body of the Delta RMP. The Steering Committee is responsible for establishing the RMP's strategic direction and the policies and procedures that govern its operation. The Steering Committee may direct RMP staff and advisory committees to assist in meeting the objectives and may delegate day-to-day functions

[2] Central Valley Regional Water Board. 2007. Resolution No. R5-2007-0161: Water Board's actions to protect Beneficial Uses of the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. http://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/resolutions/r5-2007-0161_res.pdf

of the RMP to the RMP's implementing entity.

The Steering Committee authorizes the implementation of agreements among the participating members and, specifically:

1. Directs the fiscal/operating agent to request and receive federal, state, local, and private funds from any source and to expend those moneys to accomplish the Delta RMP's goals
2. Approves budgets and expenditures
3. Directs the fiscal/operating agent to enter into partnerships, contracts, and other legal agreements on behalf of the Delta RMP, as necessary to fulfill the Delta RMP's mission
4. Approves Delta RMP work products and any other plans, products, or resolutions of the Delta RMP
5. Sets priorities and oversee the activities of the Stakeholder and Technical Advisory Committees
6. Establishes and oversees the implementation of policies and procedures necessary to the day-to-day functioning of the Delta RMP

Membership on the Steering Committee will not diminish the regulatory responsibilities or authority of any participating agency or organization.

SC co-Chairs

SC co-Chairs are part of the SC, whose responsibilities are to establish policies and procedures that govern its operation. Co-chairs serve as chair of the meetings, facilitating discussion, and encouraging members to participate in discussions. At the end of the meeting, the chair recaps what the group has agreed upon, including who has what responsibility. The co-chairs have an oversight role and are responsible for the overall functioning of the committee. Specific tasks should be assigned to staff.

Technical Advisory Committee

Under direction of the Steering Committee, the Technical Advisory Committee (TAC) provides technical oversight of the RMP. It consists of technical representatives from the RMP membership groups, with technical and administrative support from RMP staff[3]. The TAC makes recommendations to the Steering Committee based on technical evaluation of proposed or existing program elements. The Steering Committee then considers TAC recommendations in formulating their decisions. The TAC will meet as needed, at a minimum quarterly.

The purpose of the TAC is to provide oversight of the technical content and quality of the RMP. The responsibilities of the TAC are to:

- assist the Steering Committee in developing, reviewing, and revising the Delta RMP's monitoring and special studies in line with the management questions;
- report to the Steering Committee on technical issues and guide the development of white papers as requested by the Steering Committee;
- select and convene subcommittees to provide guidance on specific technical issues, with members drawn from both within and outside the TAC, as needed, to include specialized scientific or technical expertise not fully represented on the TAC;
- provide technical review and recommendations to the Steering Committee on project proposals;
- provide technical review and recommendations to the Steering Committee on policies being considered for adoption, and;
- provide technical review of the planning, development, and publication of RMP communication products, including the Pulse of the Delta report.

The TAC consists of experts in water quality, estuarine science, and related fields who are able to provide scientific opinions on the broad range of subject areas related to the Delta RMP's

[3] Currently, staff from the Central Valley Regional Water Board and Aquatic Science Center have been specifically assigned to work on the Delta RMP and are funded by the State Water Board.

activities. Finally, TAC members work collaboratively to examine technical issues and develop advice and recommendations for the Steering Committee.

TAC Structure

TAC members will be drawn from RMP membership groups represented on the Steering Committee, but are not limited to these. Each designated SC member designates one person to sit on the TAC. Thus, the voting membership of the TAC consists of technical representatives of the groups represented on the SC.

Membership on the TAC is for a two-year term. The number of terms served by an individual is not limited but membership on the TAC must be renewed. The members of the TAC will appoint a Chair for a two-year term[4]. A qualified Chair has a broad understanding of scientific issues in the Delta and can provide strong leadership, meeting management, and direction to the group.

In particular instances (e.g., a represented group has only a few staff with the appropriate expertise), a SC member or alternate may serve on the TAC. If a particular issue comes up that may create a conflict of interest, the SC member serving on the TAC would recuse themselves from decisions on the SC.

A conflict of interest may also arise if members of the TAC or its subcommittees have a direct financial interest in a funding recommendation or decision (e.g., a consultant or researcher intending to bid on a contract for a proposed program activity). The participation of local scientists in planning processes can bring tremendous value to the RMP, but the RMP needs to ensure that the monitoring that is recommended and performed is not inappropriately biased by scientists that may have a conflict of interest. In cases where a conflict of interest exists, the TAC or subcommittee members will recuse themselves from funding recommendations. External peer review of workplans and products by scientists with no financial interest in the

[4] The exceptions are the initial TAC co-chairs, which were selected by the SC and charged with forming the TAC.

work to be done is essential not only to attaining high standards of scientific rigor, but also provides a mechanism for preventing the inappropriate influence of scientists with a conflict of interest.

Delta RMP staff act as the liaison between the Steering Committee, the TAC, and the TAC subcommittees. During the design period, the TAC co-chairs provide the communication link between the SC and the TAC and will be assisted by Delta RMP staff (ASC) as needed.

TAC co-Chairs

The co-chairs coordinate the TAC's oversight of the technical content and quality of the RMP, co-chair TAC meetings, and help to ensure review of all program proposals and technical products. During the design period, they will also provide a communication link between the SC and TAC and help to ensure consistencies and resolve timing and scheduling issues between the SC, TAC, and subcommittees.

More specific roles of the TAC co-chairs:

- During the design period, communicate regularly with program staff and TAC subcommittees to ensure deadlines are met and the monitoring plan is developing consistently across all committees
- In coordination with staff, develop meeting agendas and meeting materials at least two weeks in advance of each meeting
- Facilitate meetings to ensure agenda is covered, meeting is on time, and participants are given ample opportunities to contribute
- Facilitate decisions and help ensure that decisions and recommendations are documented.

Flexibility

The TAC may recommend adding subcommittees as appropriate. If there is need for additional

expertise, subcommittees may be formed that report to the TAC. The subcommittees may be drawn from the organizations represented on the Steering Committee but may be drawn from a variety of sectors, e.g. academia, NGOs, government agencies, and industry. In addition, the TAC may advise ASC to convene appropriate science advisory panels and/or independent experts for specific projects, initiatives, reports, and studies.

Other Stakeholders

All meetings of the Steering Committee and Technical Advisory Committee are open to the public. Stakeholders that are not RMP participants will have the opportunity to weigh in by participating in meetings and providing additional project and product review. Stakeholders may also participate in specific technical subcommittees.

Implementing Entity

The implementing entity oversees and administers the Delta RMP. Currently, the implementing entity is the Aquatic Science Center (ASC). The main responsibilities of the implementing entity are outlined in **Table 1.**

Delta RMP staff

ASC and the Central Valley Regional Water Board currently provide staff support to the Delta RMP. ASC staff responsibilities are identical with the responsibilities outlined for the implementing entity (**Table 1**). Regional Board staff provides additional logistical support to the SC and TAC.

Leadership Team

The Delta RMP leadership team consists of designated committee chairs (TAC co-chairs and SC

co-chairs) and senior Delta RMP staff. In the leadership team, program staff works closely with committee chairs to 1) plan, guide, and lead program activities, 2) ensure planned activities efficiently achieve program goals and objectives, and 3) identify potential issues and challenges as well as options for effectively addressing them.

Table 1. Main responsibilities of the implementing entity of the Delta RMP.

Responsibilities	**Tasks**
1. Program management	a. Program planning • Prepare workplans and budgets b. Coordinate program activities • Act as the liaison between the SC, the TAC, and the TAC subcommittees • Coordinate with program participants • Plan workflow • Track deliverables c. Coordinate collaborating agencies and organizations • Organize and participate in meetings to coordinate work and programs d. Contract and financial management • Track expenditures • Accounting • Coordinate audits • Provide financial updates to SC • Develop and oversee contracts • Invoice program participants e. Technical oversight • Coordinate peer review • Review and coordinate review of RMP work products to ensure the quality of deliverables
2. Governance	a. SC meetings • Prepare agenda packages and background documents; participate in meetings, write meeting summaries, action item follow-up, plan meetings with Chair and Co-Chair. b. TAC meetings: • Prepare agenda packages and background documents; participate in meetings, write meeting summaries, action item follow-up. c. TAC subcommittee meetings • Prepare agendas and background documents; participate in meetings, write meeting summaries, action item follow-up

3. Communications	a. Implement communications plan • Produce and distribute RMP products • Develop and maintain a calendar of RMP communications products • Identify appropriate communication channels and disseminate RMP information • Implement planned events (e.g. annual meeting) • Respond to or coordinate response to inquiries for RMP data and reports, including press calls.
4. Data management	*Perform and/or coordinate the following activities* a. Data processing and upload to CEDEN • Format data • Upload RMP results to RDC database and replicate to CEDEN • Coordinate data collection, data management, and laboratories • Track data deliverables and pending issues b. Database maintenance and online data access • Incorporate updates and corrections to data as needed, including re-analyzed results and updates implemented by CEDEN/SWAMP • Provide, maintain, and upgrade web-based data access tools c. Quality assurance • Perform QA/QC review • Develop, maintain, and update Quality Assurance Program Plan (QAPP) • Coordinate interlaboratory comparison tests d. SOPs and templates • Develop and maintain laboratory SOP file system • Provide, maintain, and enhance software tools and processes such as EDD templates • Write and maintain internal SOPs to increase efficiency of data management tasks
5. Sampling Coordination and Logistics	*Perform and/or coordinate the following activities:* a. Coordinate field sampling b. Prepare sampling plans c. Make maps of sampling locations d. Field sampling e. Ensure delivery of samples to laboratories
6. Analysis, Assessment, and Reporting	a. Summarize information on data collected b. Develop technical content (text, analysis, graphics) c. Design and publish reporting products d. Establish, coordinate, and maintain web presence of RMP products and results

Roster

Steering Committee		
Participant Group	**Current Representative(s)**	**Affiliation**
Regulatory - State	Adam Laputz Alternates: Pamela Creedon	Central Valley Regional Water Board
Regulatory - Federal	Tim Vendlinski Alternate: Valentina Cabrera-Stagno	U.S. EPA Region 9 Water Division
Coordinated Monitoring	Gregg Erickson Alternates: Erwin van Nieuwenhuyse Karen Gehrts	Interagency Ecological Program U.S. Bureau of Reclamation Department of Water Resources
Stormwater, Phase I	Dave Tamayo Alternate: Dalia Fadl	County of Sacramento City of Sacramento
Stormwater, Phase II	Stephanie Reyna-Hiestand Alternate: Brandon Nakagawa	City of Tracy San Joaquin County
POTWs	Linda Dorn Erich Delmas Josie Tellers Alternates: Debbie Webster Tony Pirondini Nader Shareghi Jenny Skrel Sam Safi Vyomini Upadhyay Casey Wichert	Regional San City of Tracy City of Davis CVCWA City of Vacaville Mountain House WWTP Ironhouse Sanitary District Regional San Regional San City of Brentwood

Steering Committee		
Participant Group	**Current Representative(s)**	**Affiliation**
	Margaret Washko	City of Stockton
Agriculture	Mike Wackman Alternate: Bruce Houdesheldt	San Joaquin County and Delta WQ Coalition Sacramento Valley Water Quality Coalition
Water Supply	Val Connor Alternate: Stephanie Fong	SFWCA
Resource Agencies	TBD	TBD

Technical Advisory Committee		
Participant Group	**Current Representative(s)**	**Affiliation**
Regulatory - State	Tessa Fojut Alternates: *Vacant*	Central Valley Regional Water Board
Regulatory - Federal	Debra Denton Alternate: Valentina Cabrera-Stagno	U.S. EPA Region 9 Water Division
Coordinated Monitoring	Shaun Philippart Alternate: Erwin van Nieuwenhuyse	Department of Water Resources U.S. Bureau of Reclamation
Stormwater, Phase I	Brian Laurenson Alternate: Hope McCaslin Taylor	LWA LWA
Stormwater, Phase II	Karen Ashby Alternate: Gerardo Dominguez	LWA San Joaquin County
POTWs	Tim Mussen Tony Pirondini Vyomini Upadhyay Alternates: Lisa Thompson	Regional San City of Vacaville Regional San Regional San
Agriculture	Claus Suverkropp Alternate: *Vacant*	LWA
Water Supply	Stephanie Fong Alternate: *Vacant*	SFWCA
TAC co-Chairs	Joe Domagalski Stephen McCord	USGS MEI

~~*TAC Subcommittees*~~	
~~**Current Use Pesticides**~~	
~~Members~~	~~Claus Suverkropp, Larry Walker Associates~~ ~~Dawit Tadesse, State Water Resources Control Board~~ ~~Jim Orlando, USGS~~ ~~Joseph Domagalski, USGS~~ ~~Rachel Kubiak, Western Plant Health Association~~ ~~Tessa Fojut, Central Valley Regional Water Board~~ ~~Vyomini Upadhyay, Sacramento Regional County Sanitation District/Cam~~ ~~Irvine, CH2M HILL~~ ~~Xin Deng, California Department of Pesticide Regulation~~
~~Chairs~~	~~Debra Denton, U.S. Environmental Protection Agency Region 9~~ ~~Stephanie Fong, State and Federal Water Contractors Water Agency~~
~~Staff~~	~~Thomas Jabusch, Aquatic Science Center~~
~~**Mercury**~~	
~~Members~~	~~Carol DiGiorgio, California Department of Water Resources~~ ~~Darrell Slotton, UC Davis~~ ~~Jacob Fleck, U.S. Geological Survey~~ ~~Janis Cooke, Central Valley Regional Water Board~~ ~~JR Flanders, URS~~ ~~Karen Ashby, Larry Walker Associates~~ ~~Mark Stephenson, Moss Landing Marine Laboratories~~ ~~Tony Pirondini, City of Vacaville~~ ~~Vyomini Upadhyay, Sacramento Regional County Sanitation District~~ ~~Wes Heim, Moss Landing Marine Laboratories~~
~~Chair~~	~~Stephen McCord, McCord Environmental, Inc.~~
~~Staff~~	~~April Robinson, Aquatic Science Center~~ ~~Jay Davis, Aquatic Science Center~~ ~~Thomas Jabusch, Aquatic Science Center~~
~~**Nutrients**~~	

~~***TAC Subcommittees***~~	
~~Members~~	~~Brian Bergamaschi, USGS~~ ~~Chris Foe, Central Valley Regional Water Board~~ ~~Erwin Van Nieuwenhuyse, U.S. Bureau of Reclamation~~ ~~Lisa Thompson, Sacramento Regional County Sanitation District~~ ~~Lynda Smith, Metropolitan Water District of Southern California~~ ~~Rachel Kubiak, Western Plant Health Association~~ ~~Renee Pinel, Western Plant Health Association~~ ~~Stephanie Fong, State and Federal Water Contractors Water Agency~~ ~~Tim Mussen, Sacramento Regional County Sanitation District~~ ~~Tom Grovhoug, Larry Walker Associates~~
~~Chair~~	~~Joseph Domagalski, USGS~~
~~Staff~~	~~David Senn, Aquatic Science Center~~ ~~Phil Trowbridge, Aquatic Science Center~~ ~~Thomas Jabusch,Aquatic Science Center~~
~~**Pathogens**~~	
~~Members~~	~~Cindy Garcia, California Department of Water Resources~~ ~~Debbie Webster, CVCWA~~ ~~Elaine Archibald, California Urban Water Agencies~~ ~~Jay Simi, Central Valley Regional Water Board~~ ~~John Dickey, Plan Tierra LLC~~ ~~Lynda Smith, Metropolitan Water District~~ ~~Lysa Voight, Sacramento Regional County Sanitation District~~ ~~Roberta Firoved, California Rice Commission~~ ~~Steven San Julian, California Department of Water Resources~~ ~~Sue McConnell, Central Valley Regional Water Board~~ ~~Tom Grovhoug, Larry Walker Associates~~ ~~Vyomini Upadhyay, Sacramento Regional County Sanitation District~~ ~~Timothy Mussen, Sacramento Regional County Sanitation District~~
~~Chair~~	~~Brian Laurenson~~
~~Staff~~	~~Hope McCaslin Taylor, Larry Walker Associates~~ ~~Thomas Jabusch, Aquatic Science Center~~